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Network World *is pleased to accept Folio:'s prestigious Editorial Excellence Award for the Information Technology category. Folio:'s award recognizes* Network World's *unwavering commitment to its mission to* ***be the best source of information*** *on the issues Network IS professionals are faced with daily.* Network World's *industry* ***leadership position*** *has been attained by keeping a clear focus on our readers' needs. Our strategy for the future is to never lose sight of the service we provide to the network industry.*

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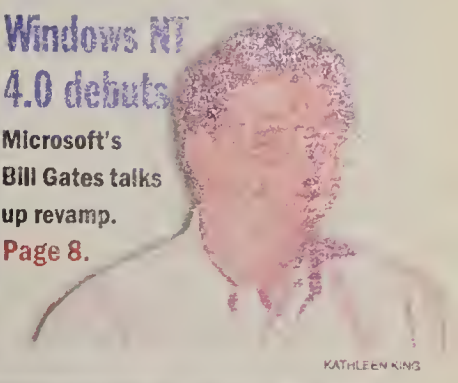
AUGUST 5, 1996 VOLUME 13, NUMBER 32

NetworkWorld

THE NEWSWEEKLY OF ENTERPRISE NETWORK COMPUTING



Windows NT 4.0 debuts

Microsoft's Bill Gates talks up revamp. Page 8.

KATHLEEN KING

FCC ruling paves long and winding competition road

TELECOM IN TRANSITION

By David Rohde and Tim Greene
Washington, D.C.

In setting rules last week for how regional Bell operating companies must unlock their monopoly grip on local phone markets, the Federal Communications Commission encouraged potential competitors by pressing RBOCs to offer attractive wholesale discounts.

But the ruling treats competitors differently. Those with their own switches have an advantage

See **FCC,** *page 61*

Get more info on Network World Fusion, including:

- **FCC documents and statements on the ruling**
- **Articles on the RBOCs signing interconnect agreements**
- **A look at AT&T's efforts to get into the local loop**

Network World Fusion

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Tivoli takes on Big Iron

TME 10 link to MVS-based NetView will enable integrated management of hosts, desktops.

SHARE NEWS

By Michael Cooney
New Orleans

IBM's Tivoli Systems, Inc. subsidiary next month will deliver products that give its TME 10 systems and network management package the power to manage mainframes.

Company officials speaking at last week's Share, Inc. user group meeting here said the products will include hooks to MVS-based NetView long-sought by large SNA shops.

These hooks will let users manage everything from mainframes to desktops from a common set of consoles.

MVS users have criticized IBM and its Tivoli unit for ignoring host-based NetView users in TME 10, its popular cross-platform systems and network management package that melds Tivoli Management Environment and IBM SystemView functionality (see *NW,* April 8, page 8).

"Initially, we did not give

See **Tivoli,** *page 12*

IBM Eagle on new route

By Michael Cooney
New Orleans

In an effort to break out of its own Big Blue box, IBM later this year will boost the multiprotocol communications capabilities of its recently introduced Software Server family, formerly known as Eagle.

IBM will add routing and multiprotocol gateway support as

See **Eagle,** *page 10*

Sun Micro's Zander defends Solaris honor

Q&A

Sun Microsystems, Inc. is hot. The company just posted its first $2 billion quarter, is winning lots of Internet and intranet server accounts and is opening up many a CIO's door with Java. Edward Zander, president of the company's hardware business unit, last week paid a visit to *Network World* Associate News Editor Bob Brown and Staff Writer Ben Heskett to discuss the company's recent triumphs and the challenges that lie ahead from Microsoft Corp. and others.

Zander *says Windows NT is no Solaris.*

See **Sun,** *page 12*

Start-up 'autosenses' switching opportunity

By Jim Duffy
Acton, Mass.

Convinced that an autosensing Ethernet/Fast Ethernet switch is going to cost you $1,000 a port? Start-up NetICs, Inc. is changing that rule by offering switches for $300 to $400 per port.

That is at least 60% less than Bay Networks, Inc.'s 28115, the leading 10M/100M bit/sec switch on the market with 220,000 to 250,000 ports shipped. And that means users could buy two or three NetICs switches for each Cisco Systems, Inc. Catalyst 2900, Cabletron Systems, Inc. FastNet 100 or NBase Communications MegaSwitch II.

SHAWN HENRY

NetICs *founders Vacon (seated), Fite (left) and Salett.*

"NetICs is going to change the price structure in the industry," said Michael Howard, president of Infonetics Research, Inc. in San Jose, Calif. "They have the full feature list that people want. This will make every other vendor in the industry stand up and take notice."

Bay already has. The company will drop the price of its 28115 to $610 per port from $1,053 per port on Sept. 1, which is still about twice as much as NetICs' switches.

"We're trying not to tell a lot

See **NetICs,** *page 13*

Xylan to make switch upgrades a snap. Page 7.

In-Site

NASA: Sky is the limit for low-speed ATM

Deep Space Network will be anchored by T-1 links.

A team *from the Jet Propulsion Laboratory has chosen T-1 ATM both for bandwidth efficiency and network reliability.*

By Tim Greene
Pasadena, Calif.

When a deep-space mission sends down once-in-a-lifetime data from a billion-dollar flight to Jupiter, NASA can't afford to fumble on the receiving end.

That's why NASA is using tried-and-true T-1 lines to carry data from three satellite dishes around the globe to the Jet Propulsion Laboratory (JPL) here, where it is analyzed.

While network reliability is still JPL's top concern, a variety of factors are coming into play as the organization plots a network

See **NASA,** *page 16*

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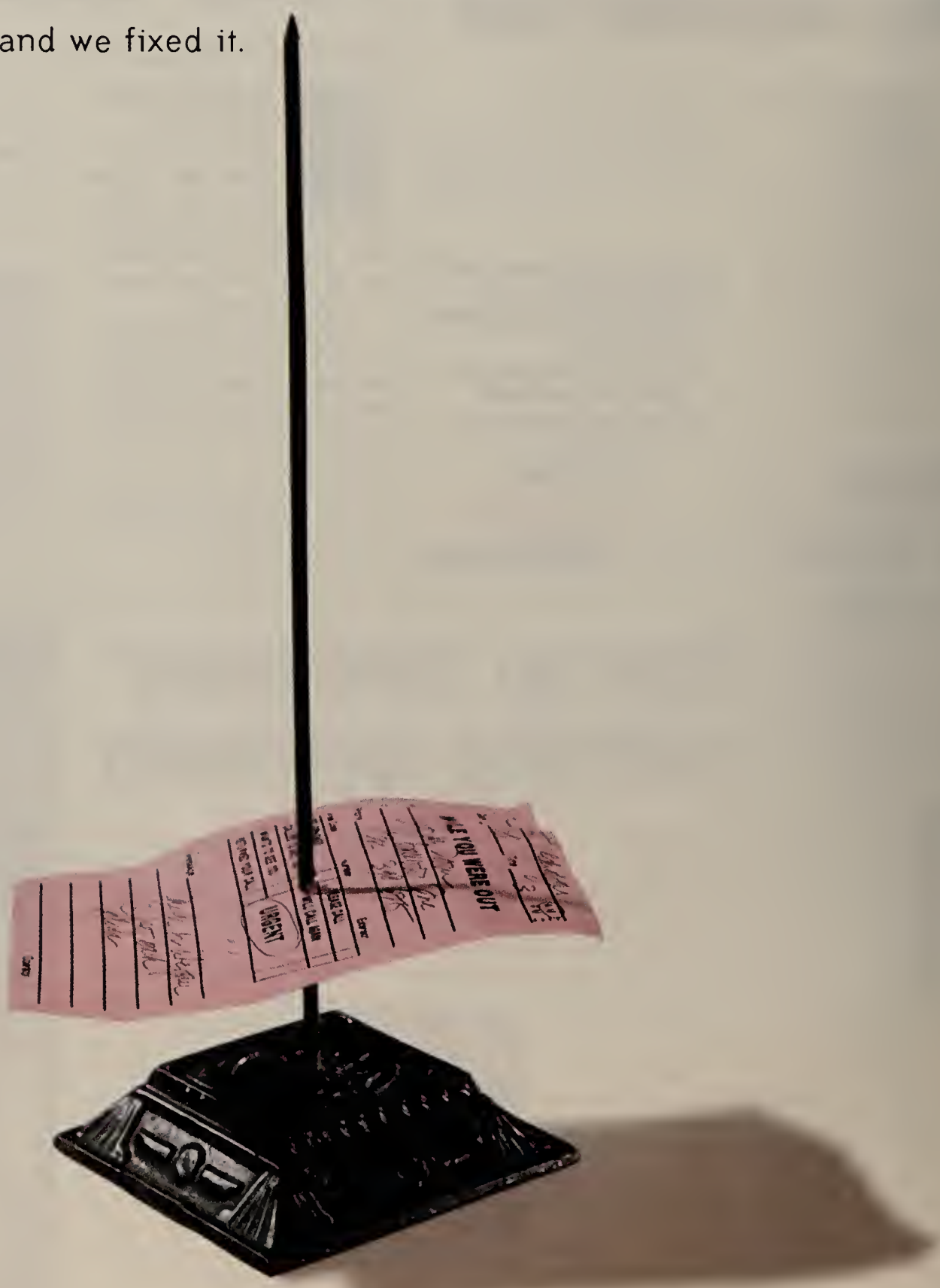

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This Week

News+

The Industry Watch section now features financial news about networking companies and a new stock-quote service courtesy of Quote.com. You can set up a portfolio to be tracked automatically, or see how various industry groups and indexes, including networking, software and the Internet are doing on a daily or even minute-by-minute basis.

- **Telecommunications:** Download FCC documents related to last week's decision on competition in local telephone markets.
- **Fast Ethernet:** Bone up on the technology with primers and buyer's guides.
- **The industry:** Read more of our interview with Edward Zander, president of Sun's hardware division.
- **Application development:** Catch up on the enhancements that vendors of object-oriented tool kits have been adding to their products in recent months.
- **The Web:** Download papers on Java security issues, as well as a copy of demo software for killing Java applets that behave suspiciously.
- **Virtual private networks:** Read how one beta user got AT&T to improve its Software Defined Network service and find out how AT&T is using an international callback scheme it once opposed.

NetRef

This week, we review five tools for enhancing Novell Directory Services (p. 45). Download a guide to installing and using these applications, in Product Reviews/Buyer's Guides.

this week's pick

O'Reilly and Associates recently put its *Dictionary of Hardware and Data Communications Terms* online. Although you can't browse by letter as with other online dictionaries, you can get detailed definitions of terms, along with hyperlinks for more info. It's at http://www.ora.com/reference/dictionary.

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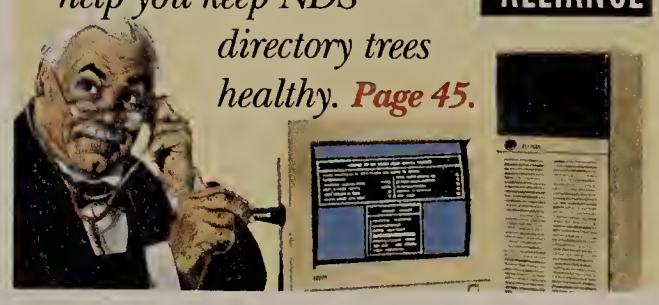
NetworkWorld TEST ALLIANCE



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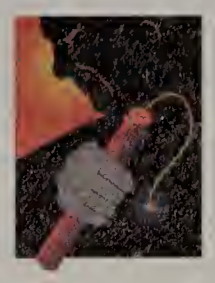
NetworkWorld's *Mission: To provide news and analysis that help network IS professionals deliver the network computing infrastructure and distributed applications required to meet evolving business needs.*

News briefs, August 5, 1996

Taking precautions



In the wake of the TWA crash and the Olympics bombing, the G-7 group of nations met last week in Paris and released a 25-point declaration calling for a concerted effort to monitor cultural groups that may be covers for terrorists. However, a number of the G-7 recommendations, including one to give governments access to encrypted communications through a key-escrow plan, met with condemnation by groups such as the American Civil Liberties Union.

Rallying around VRML

Mark Pesce, who invented the Virtual Reality Markup Language with Tony Parisi, has formed the VRML Consortium to help bring an improved level of interoperability to the dozen or so VRML browsers that exist. "The same file in 12 VRML browsers looks different in 12 ways," said Pesce, who announced the consortium's conception at last week's Web Interactive show in New York.

IBM trusts Nortel for security

Northern Telecom, Inc. said it is licensing its Entrust security software to IBM for use in IBM's electronic commerce offerings. Entrust gives users a way to identify each other through electronic certificates based on public-key cryptography. IBM anticipates that incorporating Entrust into its offerings will help buyers and sellers verify identities over the Internet.

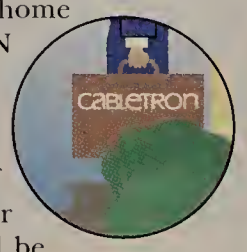
Separately, IBM last week announced a new version of its IBM AntiVirus software that will let customers scan Internet documents for embedded viruses. IBM AntiVirus 2.5 can scrutinize more than 8,000 strains of computer viruses.

IBI puts Focus on the Web

New York-based Information Builders, Inc. (IBI) next week will announce WebFocus, a tool set based on its Focus 4GL that will enable customers to put production database reporting and executive information systems on the World-Wide Web. A Common Gateway Interface script passes browser requests to server-based Focus programs that can then execute complex, multiserver reports and queries. The results are formatted into HTML pages the browser can access. Pricing starts at $6,500 for Windows NT servers and $105,000 for large Unix servers or mainframes.

Cabletron goes home

Cabletron Systems, Inc. this week will stray from its corporate customer focus and go after the small office/home office market with a new family of ISDN remote access devices. The company is somewhat late offering consumer-level products given that 3Com Corp., Ascend Communications, Inc., Cisco Systems, Inc. and Gandalf Systems Corp. have already shipped similar devices. Cabletron's remote access gear will be available this fall; pricing has not yet been set.



Separately, Cabletron is readying a new 36-port Ethernet SmartSwitch for its high-end Multi Media Access Center-Plus. The module, which will be available by year-end, will be priced 60% lower than the company's current per-port Ethernet rates.

SNMP vendor snapped up

Integrated Systems, Inc. last week acquired SNMP software developer Epilogue Technology Corp. for approximately $20 million. ISI makes embedded operating systems for the data communications, telecommunications, Internet and multimedia industries. With the Epilogue acquisition, ISI plans to develop silicon that handles SNMP and other management tasks, and that can be embedded in networking devices.

Lotus marks its calendar

Lotus Development Corp. last week announced the availability of the Internet Calendar Access Protocol (ICAP) specification for common Internet calendaring and scheduling. The spec is available on Lotus' Web site (http://www.lotus.com) for evaluation.

Netscape and Microsoft square off

Has Netscape been encouraging Web server customers to break NT license agreements?

By Carol Sliwa

Netscape Communications Corp. admits to encouraging customers to run its Web server software on Microsoft Corp.'s Windows NT Workstation. But does that also mean Netscape has been giving them tacit approval to violate their software licensing agreements with Microsoft?

Jim Allchin, Microsoft's senior vice president in charge of Windows, thinks so.

"NT Workstation has a very specific license," Allchin said last week. "It was designed for interactive use, not server use."

As far as Microsoft is concerned, NT Workstation is not licensed to handle more than 10 inbound connections for peer-to-peer network services, whether those are file/print or Web services. The new Version 4.0 license agreement states: "You may install the software product on a single computer for use as interactive workstation software, but not as server software."

"I can remind people, including Netscape, that that's what the license says, and we mean it," Allchin said.

Microsoft claims that the 10-connection limit is necessary to prevent performance degradation and reduced user productivity. Customers that want to run a Web server on NT should opt for the NT Server version, which comes bundled with Internet Information Server and the FrontPage Web authoring/management tool, the company said.

But Netscape said its Web servers work just fine on NT Workstation, which costs just $319. So why pay almost twice as much?

"The product performs equally well on both platforms," said Atri Chatterjee, Netscape's director of server product marketing. "There's no justification for a higher price for NT Server when all the customer wants to do is run a Netscape FastTrack or Enterprise server on it ... Hold onto your wallet. Here's Microsoft trying to get more money from you."

Netscape was not encouraging its customers to violate Microsoft's licensing agreement, Chatterjee said, since the NT Workstation 3.51 licensing agreement contained no explicit reference to Web servers.

With its 4.0 licensing agreement, Microsoft has elected to clarify the matter.

Given this, will Netscape continue to encourage customers to use NT Workstation for its Web servers? Chatterjee said he will have to evaluate the new licensing agreement before issuing a statement.

Netscape certainly is not alone in confronting this dilemma. O'Reilly & Associates, Inc., maker of the WebSite server line, has been up in arms trying to get Microsoft to change its mind about Windows NT Workstation licensing (*NW*, July 22, page 6).

"I worry that customers might get confused in that [Netscape] might be encouraging them to do something that would violate the [Windows NT Workstation] license."
Jim Allchin, Microsoft

"They would like people to believe that they're simply setting the licensing terms of their own products," said Tim O'Reilly, president of the company. "I believe they're asserting that they have the right to tell people, via their licenses, what they can do with the Internet."

Microsoft had put a technical limitation in the NT Workstation beta code that limited the number of connections to 10 in a 10-minute period. The company recently removed that code from the final product. ■

TI to model new tools

By John Cox
Plano, Texas

Texas Instruments Software wants to launch corporate developers into a new career: modeling.

The company this week will unveil Performer, an object-oriented tool set for graphically building application models from which final, compiled code is generated. Developers can also use Performer to create models of applications built using existing client/server

See **Performer,** *page 13*

TEXAS INSTRUMENTS' PERFORMER

Developers graphically create models, from which Performer generates SQL and compiled code. It is used for departmental applications that need to support growing numbers of users and work with multiple servers and legacy systems.

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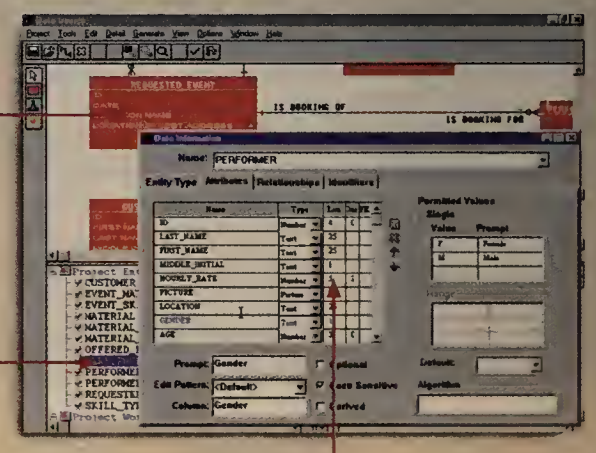

3. Fill in details; tool set generates SQL code to create a database.

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Xylan lets users shift from Ethernet to ATM backplanes

By Jodi Cohen
Calabasas, Calif.

Xylan Corp. this week will introduce a flexible backplane and a host of high-speed modules designed to extend the life of its departmental switches to five or more years.

The products will enable OmniSwitch customers to migrate from switched Ethernet to Asynchronous Transfer Mode simply by exchanging switch modules. This differs from the typical scenario in which customers must conduct a forklift upgrade to move from one network technology to another.

"This gives us flexibility, and that's exactly what you want nowadays," said Len Monteleone, vice president at Tullett and Tokyo Forex, Inc., a foreign exchange broker based in London. "If we decide not to go with ATM and move to Gigabit Ethernet, that's no problem because we're not locked into any one environment."

The key to the OmniSwitch's newfound flexibility is X-plane, a backplane that can operate as either a 13.2G bit/sec ATM cell matrix dubbed OmniCell or an 11.2G bit/sec high-speed Ethernet frame matrix called OmniFrame. The backplane mode is determined by whether ATM or Ethernet modules are plugged in to the box.

Xylan will upgrade customers' existing OmniSwitches by swapping out their 640M bit/sec backplane for an X-plane. The old backplane locked customers into frame-based nets and limited overall capacity.

Aside from the X-plane, analysts said the switch's massive port density will set the OmniSwitch apart.

The nine-slot switch, when using one slot for a management module, will support as many as 16 Gigabit Ethernet ports, up to 128 10M/100M bit/sec Ethernet ports and as many as 256 10M bit/sec Ethernet ports.

And on the ATM side, the chassis will support as many as 128 25M bit/sec ports, 64 155M bit/sec ports and 16 622M bit/sec ports (see graphic).

"This design gives customers quite a bit of breathing room beyond the next several months, which is a hell of a lot better than most switches for the wiring closet today," said Frank Dzubeck, president of Communications Network Architects, Inc., a consultancy based in Washington, D.C.

For example, Cisco's Catalyst 5000 is limited by its 1.2G bit/sec backplane to support 50 Fast Ethernet ports — less than half of Xylan's 128-port maximum configuration.

And jam-packing the box with high-speed links is critical for today's network traffic patterns, according to Glenn Gabriel Ben-Yosef, president of Clear Thinking Research, a Boston-based consultancy.

"Having the ability to put in any different proportion of high- and low-speed ports is very important because most of the traffic is going out of the wiring closet switch, out to the backbone and down to a server farm," he said.

Pricing for the new products has not yet been set.

©Xylan: (818) 880-3500.

Take your pick

Xylan's OmniSwitch offers the choice of an ATM or Ethernet backplane.*

Modules for the OmniCell 13.2G bit/sec ATM backplane:

- 8-port 155M bit/sec ATM switch
- 16-port 25M bit/sec ATM switch
- 2-port 622M bit/sec ATM switch
- LANE module

Modules for the OmniFrame 11.2G bit/sec frame backplane:

- 16-port 10M/100M bit/sec Ethernet switch
- 8-port 100M bit/sec Ethernet switch
- 32-port 10M bit/sec Ethernet switch
- 2-port Gigabit Ethernet switch

*All ATM modules will ship by year-end. All Ethernet-based modules will ship in the second quarter of 1997.

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Windows NT sent to the presses

Microsoft touts ease of use and administration; users look forward to connectivity.

By Christine Burns and Carol Sliwa
Redmond, Wash.

Cracking jokes about how laughable previous versions of Windows NT have been, top Microsoft Corp. executives last week officially released Windows NT 4.0. This version, they said, is scalable and secure, and includes enough networking features and Internet ties to position it as a serious candidate for enterprisewide deployment.

"The goal here was ambitious: The best of Unix, the best of NetWare and the best of Windows," said Microsoft CEO Bill Gates.

User reaction to the NT 4.0 rollout was strong, as beta testers lauded Microsoft's efforts to enhance performance, improve networking services and bundle in Internet features.

Microsoft's *Gates follows ambitious goal.*

In fact, when NT 4.0 hits the shelves later this month, users will get a server platform that is easier to manage via the Windows 95 interface and Administrative Wizards, tools that help automate tasks such as adding users and managing hardware.

NT Server 4.0 has improved remote access features such as support for virtual private networks over public lines and aggregation of multiple phone lines for more bandwidth. And NT Server 4.0 is better suited for mixed networks with ties to Unix's Domain Name Service (DNS) and updated NetWare client software, the company claimed.

For ready-made Internet access, NT Server 4.0 comes bundled with Internet Information Server 2.0 and Microsoft FrontPage 1.1.

On the workstation side, Microsoft added the Windows 95 user interface, bundled its Internet Explorer Web browser and included an automatic dial-up feature for easier remote access.

Users are eager to get their hands on the better remote connectivity offered by NT 4.0.

John McMains, a systems integrator with Network Computing Solutions in Raleigh, N.C., said he is interested in using the 4.0 RAS Multilink channel aggregation. "This gives you the ability to have a remote user tap into two phone lines at once for twice the bandwidth," McMains said.

Support for the Point-to-Point Tunneling Protocol in NT 4.0 should provide companies with a more cost-effective means to tie branch offices to the corporate network.

With this, companies will be able to set up virtual private networks via low-cost Internet lines, according to David Wihl, a developer and president of the New England NT Users Group.

"But my concern is that there are competing protocols out there that do the same thing and Microsoft hasn't outlined how they will interact with those protocols or products that may support them," Wihl said.

Playing nicely

Users are also ready for Windows NT 4.0 to play more nicely in both Unix and NetWare environments.

Integration of the Windows NT 4.0 name space, called WINS, with its Unix-based counterpart DNS provides a means for machines using dynamic IP addresses to locate each other. "This becomes especially important when you have NT clients trying to use applications running on a Unix server," said Mark Kapczynski, interim president of the newly formed World-Wide Association of NT User Groups.

"Before NT 4.0, if we had clients that wanted to access a Unix application, we had to manually assign that client a static IP address, which sort of defeats the purpose of an IP pool and can be time-consuming," said Kapczynski.

While pleased with the Unix integration, users are skeptical that Microsoft is giving them all they need to have NT coexist with NetWare.

The company has ramped up its NetWare client for NT 4.0 with better integration with Novell's Directory Service, but has not included any management ties to NDS. "But that is what I am looking for in a NetWare client," said Jeff Pooley, associate director of computer services at the University of Southern Florida. "I want to be able to manage the NDS trees from my desktop." ■

Fun facts about Windows NT 4.0

- It was released to manufacturing at 9 a.m. on Monday, July 29, 1996.
- It comprises 16.5 million lines of code.
- It supports 6,000 hardware platforms and 4,000 device drivers.
- Microsoft has spent over $400 million on NT development to date.
- Approximately 250,000 beta copies have been distributed.
- Microsoft has fixed about 5,600 bugs in the beta code since April.

SOURCE: MICROSOFT, REDMOND, WASH.

Explorer heads to new worlds

By Carol Sliwa
Bellevue, Wash.

Apparently Microsoft Corp. is not the superstitious type.

Last week at the IE Reviewers Workshop here, company officials announced plans for an August 13 launch of its Internet Explorer 3.0 Web browser, which features Java, ActiveX and HTML 3.2 support; cascading style sheets; and a ratings system for users to screen out objectionable content.

Microsoft's chief competitor, Netscape Communications Corp., has yet to make public the ship date of its Navigator 3.0 browser, other than to say it will be out some time during the month of August.

With its latest version, Microsoft has made up considerable ground, even venturing into Netscape's cross-platform world, working with third parties on a Unix browser due for release later in the year.

Like its rival, Microsoft plans to offer an administration kit that will help network managers exercise a level of control over their corporate desktops, from the look and feel of the browser and the content that users can access to the configuration of different options and settings.

Among the many other plans that Microsoft talked up at the workshop was its intention to enable its Web browser to work offline.

Microsoft also last week announced an Internet Referral Server that gives users the ability to choose and subscribe to an Internet service provider directly. ■

MORE NT NEWS

What are we waiting for?

Microsoft has crammed quite a few bells and whistles into Windows NT 4.0. However, users still must wait for features such as clustering, full-blown directory services and complete device driver support.

"Clustering is in huge demand because people have started building their businesses around things like SQL Server and Internet Information Server running on NT. They need assurances that data is protected and applications are up and running," said Mark Kapczynski, interim president of the World-Wide Association of NT User Groups.

Microsoft is working on clustering for Windows NT server, an API set code-named Wolfpack, which will not be ready until early next year. Application vendors will need to exploit those APIs before clustering starts to blossom on NT.

Where's the directory?

Users also want directory services that go beyond the existing NT Server domain-based system. The domain approach requires a network manager to set up trusted relationships between groups of clients and servers if clients want to access services outside of their domain. This scheme, which lacks a central repository of information, is difficult to administer. Microsoft has said users will not see a full-blown directory in NT until Cairo, the next release of NT due out in 1998.

A common complaint about the Windows NT 3.X line is lack of device drivers. "I think driver support [in NT 4.0] is greatly improved, but they are still only about 80% there," said Jason Perlow, an engineer with New Technology Partners in Bedford, N.H.

Mike Nash, group product manager for Windows NT, said this new version supports more than 6,000 hardware platforms and another 4,000 devices. Nash also said support will grow further when Microsoft delivers a common device driver model that allows developers to write one driver for both Windows 95 and NT 4.0; this driver is due by year-end.

— Christine Burns

Developers join in

With the rollout of Windows NT 4.0 last week came the introduction of companion products that seek to capitalize on NT's new features and its projected market share.

NCR Corp. announced SMP Utilization Manager, a tool that can make specific application processes run against specific processors right at the thread, or individual process, level. That means that processes can be completed more rapidly because certain functions are performed by a closer processor.

This will improve performance in NCR's Pentium and Pentium Pro-based 8-way and 16-way WorldMark server hardware. And by using a layer of middleware, NCR can take NT past its limit of eight processors.

SMP Utilization Manager is available now and is packaged free with all WorldMark servers.

A Novell approach

Novell, Inc. announced an open beta cycle for its new client software that sits on either an NT 3.51 or 4.0 workstation and gives users full access to NetWare services. This software includes the Novell Application Launcher, which uses Novell Directory Service (NDS) to give NT users access to applications regardless of where they physically lie on the network.

In addition to allowing an NT workstation to reside on an NetWare 4.X network, this client software will let administrators centrally manage NetWare services, including NDS, according to Cary Pittard, a product manager with Novell.

This beta version of Novell's upgraded client will be available Aug. 14 from the company's Web site, www.novell.com.

— Ben Heskett and Christine Burns

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HEWLETT® PACKARD

Network General seeks new mgmt. role

Company to correlate data from multiple probes, resell Frontier RMON tools.

By Ben Heskett

Network General Corp. plans to announce software at NetWorld+Interop 96 next month that will correlate data from assorted management agents and present it on a common console.

Data collected from various SNMP and Remote Monitoring agents, including Network General's line of Sniffer probes, will be fed into a relational database and then filtered, based on questions posed by a network administrator. The data forwarded to the management console can be viewed from there or exchanged with an enterprise management platform, such as Hewlett-Packard Co.'s OpenView.

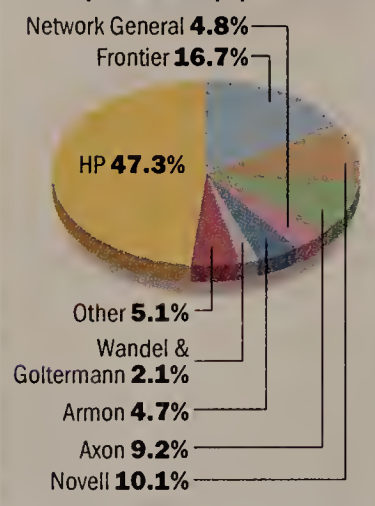
"Network General's got to move up from its tradition of doing a lot of collection and recognize that an awful lot of collection of data is going to be done by embedded probes and other probes supplied by other people," according to Les Denend, Network General's president and chief executive officer.

"What we hope to do with our next-generation product is integrate this data so the source of the information is not nearly so critical."

The new software — the name of which Network General would not disclose — will be able to distinguish between different types of network agent information and organize it accordingly, Denend said.

Heading into the wild Frontier

Network General, which grabbed only a modest share of the RMON probe market last year, is dropping its probes and will resell Frontier's, which proved more popular.



Total= $102 million in sales (based on data from the first half of last year)

SOURCE: IDC, FRAMINGHAM, MASS.

Pricing and more specific product information is not yet available.

Tearing down Foundation

In related news, Network General last week said it will drop its Foundation line of RMON probes and resell those of Frontier Software Development, Inc. Frontier's products support a wider array of topologies, including FDDI and frame relay. Network General will continue, however, to provide support for its Foundation Manager, Foundation Probe and Foundation Agent RMON products.

Users and analysts reacted favorably to the deal with Frontier.

"Frontier is probably the best one in the business," said Brian Huang, a network management analyst with Toys 'R Us in Parsippany, N.J., and who already has both Frontier and Network General products.

"For several years [Network General] has been reluctant to go full bore with RMON products," said Michael Howard, president of Infonetics Research, Inc., a San Jose, Calif.-based consultancy.

"This really fills in that chink in the armor as far as being a leader in the network management industry," he said.

Network General originally obtained its RMON technology via the 1994 acquisition of Pro-Tools, Inc. for $2 million. But delays in bringing Windows and Unix-based RMON products to market cost the company, according to Denend. ■

VocalTec's gateway to bridge traditional, 'Net telephony

By Joanie Wexler
New York

The Internet telephony market continued to heat up last week as VocalTec, Inc. introduced a gateway that glues the 'Net and public phone system together, and launched phone plug-ins for Web browsers.

The company's new family of Internet Phone products aims to bridge traditional and Internet telephony, officials said at the Web Interactive trade show here. The products allow users of phones or PCs to place calls over the 'Net to other standard phones or PCs running VocalTec's Internet Phone software.

The Internet Phone Telephony Gateway Server, which runs off a computer-telephony board from VocalTec partner Dialogic Corp. installed on a PC, is the gizmo that links the 'Net and telephone network. It has security, billing, audio quality monitoring and interactive voice response features, VocalTec said.

The gateway, which can connect to customers' computer networks or telephone systems on their premises, or can run in the public telephone network, costs $3,995 for a single-line system. Each gateway can support as many as four lines.

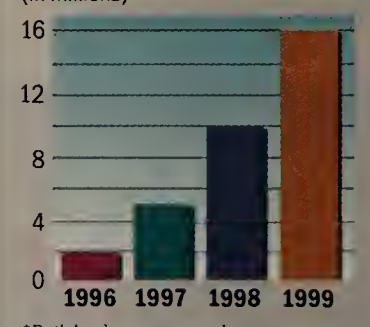
Analysts predict that such products will thrive first on customer premises.

"I would be surprised if many telephone companies would run these gateways in the near future; they derive most of their revenues from voice," said Steven Taylor, president of Distributed Networking Associates, a consultancy in Greensboro, N.C. "They can already charge you for toll calls, and that's their bread-and-butter business."

On the other hand, for PBX-to-PBX connections within corporations, the user motivation is similar to that behind the growing interest in another packet protocol, voice over frame relay — lower phone bills. Based on MCI Communications Corp.'s per-megabit usage pricing plan, for example, voice over frame relay could run as low as half a cent per minute, Taylor said. He added that public IP-based voice prices could be similar.

LOOK WHO'S TALKING

Projected worldwide 'Net phone users*



*Both business users and consumers.

SOURCE: IDC, FRAMINGHAM, MASS.

VocalTec already has competition in this market: NetSpeak Corp. said in June it will launch a telephone system-to-Internet gateway, as well as software that functions as a PBX and automatic call distributor (*NW*, June 17, page 21). Those products were supposed to ship in July but have been delayed until late this month, a company spokeswoman said last week.

Neither firm has said when it will support the newly approved H.323 standard for running real-time applications such as voice and video over packet-switching networks such as the Internet and allowing different vendors' 'Net phones to interoperate.

The browser software will be available at http://www.vocaltec.com in beta versions late this month. VocalTec said it also has a Web-based conferencing system in development, with details to come later this month. ■

Eagle

Continued from page 1

well as improved SNA connectivity to the servers so they can be deployed anywhere in an enterprise network, according to company officials at the Share, Inc. user group meeting here.

SHARE NEWS

IBM's seven-member Software Server family consists of modular application packages that can run on a variety of operating systems, including OS/2 and AIX, and hardware such as Reduced Instruction Set Computing- and Intel-based workstations. Servers can support network and systems management, transaction processing, Lotus Development Corp.'s Notes and other applications.

Strategically, the software bundles are intended to simplify what has been a hodgepodge of products and give IBM a weapon to do battle against Microsoft Corp.'s BackOffice server suite. BackOffice already supports third-party router software and multiprotocol communications technology.

Lois Dimpfel, vice president of IBM's Networking Software Products division, said the Software Server enhancements will help the company "provide users with the easiest possible way to support a multiprotocol server environment."

One of the first and most significant ways IBM can do this is by adding routing capabilities to its workgroup servers. Small workgroups may need routing to communicate across a corporate TCP/IP backbone but do not need the expense of a full-blown router, Dimpfel said.

While IBM declined to say specifically how it will add routing to its servers, analysts said the company would likely use the Proteon, Inc. technology from its low-end 2210 router. IBM said the server routing module would include SNA prioritization schemes to ensure that mission-critical SNA data gets where it needs to go first.

The move to integrate routing into the server software is seen as a response to server competitors such as Compaq Computer Corp., which is putting routing and other internetworking capabilities into its machines.

IBM said it is also exploring ways to deploy TCP/IP's Domain Name Service on its Software Servers to let customers mix SNA, Advanced Peer-to-Peer Networking and TCP/IP nets. This feature would let end users find and access resources in mixed nets more easily.

"TCP/IP is everywhere, and we will be adding features to make it easier to mix our SNA network users with the TCP/IP environment," Dimpfel said.

Not wanting to leave any other protocols out of the picture, IBM will also add gateway software to let servers support IPX and NETBIOS over SNA and TCP/IP nets. In addition, the Communications Server pack will be enhanced to include an eclectic mix of network support from IBM's High Performance Routing to ATM LAN emulation. Frame relay support is on the way as well.

"Packaged software is what we are looking for. We like the idea that these [Software Servers] are supposed to be integrated and tested to make sure they'll work together," Caluori said.

While IBM is not giving out sales numbers for the Software Servers, which have only been shipping since the beginning of summer, customers seem to like the software bundling strategy.

"Packaged software is what we are looking for. If you tell me I am going to be a vendor's systems integrator, I'll tell you no thanks," said Anne Caluori, president of Share. "We like the idea that these [Software Servers] are supposed to be integrated and tested to make sure they'll work together." ■

Messaging

Lotus ships Notes MTAs, Domino

By Barb Cole
Cambridge, Mass.
Lotus Development Corp. has finally made good on its promise to better integrate Notes into the corporate messaging landscape.

The company last week shipped long-awaited Message Transfer Agents (MTA) that route and translate messages between Notes and several key mail systems.

Notes links to IBM mainstays

Product	Availability
IBM MQSeries Link	Now
LotusScript extensions for MQSeries	Now
IBM CICS Link	Q4

The new offerings include the Simple Mail Transfer Protocol MTA for sending mail between Notes and the wildly popular Internet-based mail systems, as well as an MTA for the company's own cc:Mail system. A third MTA, for linking Notes to X.400-based mail systems, will be available in October.

The SMTP MTA is probably the most critical, according to analysts. "I can't imagine anyone setting up an enterprise mail system today without [an SMTP link]," said Mark Levitt, an analyst at International Data Corp. in Framingham, Mass.

Lotus began talking up the MTAs long before Notes Release 4.0 hit the streets last January, and originally intended to ship the MTAs in conjunction with that release.

Company officials said the MTAs were delayed in order to deliver a higher level of functionality than traditional gateways. For instance, the cc:Mail MTA delivers full directory synchronization between Notes and cc:Mail, making it easier to move users between the two mail systems.

The MTAs strengthens Lotus' position in the messaging world, according to Sara Radicati, president of The Radicati group, a Palo Alto, Calif.-based consultancy.

"Finally, [Lotus] has integrated the leading messaging transport technologies in one box, making it easier for customers to build complex messaging networks," according to Radicati.

The cc:Mail and SMTP MTAs for OS/2 are free, and free Windows NT versions are due next month. The X.400 MTA will be available for $4,995 on OS/2 and Windows NT.

Oh, Oh Domino. . .

Also last week, Lotus shipped Domino, a Notes/Web server hybrid that supports HTTP and translates documents between Notes and HTML on the fly. Domino, which requires a Notes server, is free.

Domino runs on Windows NT, but versions for Unix will ship in October.

In addition, Lotus divulged more details on Notes Release 4.5, due later this year. A key focus of the release is tighter integration with Windows NT, including a single password login and directory synchronization between Notes and NT.

In the new release, Notes and NT user administration may be done from either the groupware system or the operating system. And Notes events, such as replication, may be managed from Windows NT.

Separately, company officials last week acknowledged they are still considering a Notes port for IBM's OS/390 operating system, but stopped short of committing to develop the product.

The feasibility study that was begun last year to determine the viability of a mainframe version of Notes "is going extraordinarily well," according to Alex Neihaus, senior marketing manager at Lotus. "It looks good, but there hasn't been a decision yet," he said.

A "Monster" Notes could better support large volumes of users and Web-based collaborative applications, analysts said.

"Some of these host systems will be around forever, and should be able to get beyond the 1,000-user-per-server limit associated with Notes," according to Gary Rowe, a principle in the Atlanta office of Rapport Communication, a market research firm and consultancy.

✆Lotus: (617) 577-8500.

ANS adds Java, Web to firewalls

InterLock Service also provides reports on Web usage.

By Ellen Messmer
Elmsford, N.Y.
Internet service provider ANS, which manages firewalls for customers on an outsourcing basis, last week said it has added Java and Web controls to its service.

Corporations using the ANS InterLock Service and software can now configure their firewalls to filter out Web URLs, blocking access to a page, directory or site.

ANS, which promises around-the-clock monitoring of each firewall it installs, has added Web reporting to its InterLock software so network managers can keep track of Web usage by employee or division.

"We make the reports available through a Web browser," said Eric Nowak, manager of customer service at ANS. "From a reporting standpoint, managers can find out who the big Web surfers are, and even set up a chargeback system."

The new Java controls let administrators prevent the importing of applets written with the programming language into the corporate intranet.

One InterLock customer, Thompson Legal Publishing, Inc. in Stamford, Conn., wants to control the use of Java applets.

"There are a lot of unknowns about Java right now," said Ed Green, network analyst at Thompson. "We want to use Java, but only for clearly defined business reasons." Green said the InterLock upgrades will let Thompson control Java use as well as enforce a new corporate policy that makes downloading of non-work-related Web graphics unacceptable.

✆ANS: (914) 789-5343.

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Sun

Continued from page 1

Solaris has a lot going for it, but Microsoft's still getting all the attention. Why don't the Unix vendors make more news if their products are so good?

You have a bunch of "Unix vendors" who aren't Unix vendors anymore, and then you have one vendor that has been following one strategy all along called Sun that makes products. Unix is just part of our strategy. We're focusing on network computing with servers, desktops and the Java-based paradigm with the Internet and intranets. So we're focusing on solutions, markets, applications, industries — and it's working. I'm not interested in getting involved in consortiums to talk about Unix. X/Open. . .those are things of the past. It's time now to focus on Sun and Solaris and what we're doing.

In light of Windows NT 4.0 being released to manufacturing this week and that previous editions have made big inroads in corporate America, what is Sun doing to counteract this?

NT is nothing new. It's been out there since I don't know how long. . .four years? They just announce it again and again. It's going to be a factor, it's a competitive product at the low end, but you've got to deal with it and move on. You can't wallow like so many of these companies that spend years tracking Microsoft and Intel just so they can compete with every other vendor.

Why is [Digital Equipment Corp.] having problems? Why is IBM still half-baked? Why is HP all of a sudden telling the world that they're having some problems? Is it because everyone is tracking the same monopolies in Intel and Microsoft? Is it just maybe that you can't make money on that business and you can't innovate and you can't differentiate yourself in the market?

We want to be a computer and technology company. We're just going to keep innovating. Microsoft is announcing today that NT is eight-way scalable. Well, Solaris just went to 32-way. And with the Cray acquisition, we'll be taking it to 64-way. We're doing high availability, we're doing 64-bit extensions. By the time NT gets there, we'll be off doing something else.

So Sun is going to ignore the growth of NT?

We're going to keep doing what we're doing: Embrace the Microsoft NT and Intel world with our software. Over the next three to six months, you'll see a road map from us on managing NT environments.

How are you positioning Solaris vs. NT?

The operating system going forward, at least at the enterprise level, is not a factor as much. We don't go out and sell Solaris — no customer's calling me to ask me about Solaris vs. HP-UX. It's a different sale we're on right now: data warehousing, network management or customer management systems, SAP or Oracle, Informix or Internet servers. So while I'll get into talking about the attributes of Solaris — the fact that it scales better and has better reliability, it isn't like the old days. I'm not spending a lot of time worrying about an operating system tug-of-war.

PROFILE: SUN MICROSYSTEMS

Headquarters:	Menlo Park, Calif.
Primary business:	Servers (Ultra Enterprise and Netra models), workstations and network computers (Java clients)
Fiscal 1995 revenues:	$5.9 billion (total Sun revenue; figures are not broken out for each division)
Money devoted to R&D:	9% of total earnings
Number of employees:	17,000

Compaq Computer Corp., a company that relies on the Wintel architecture, is now announcing workstations, offering network products and Internet servers, and winning corporate accounts like Smith Barney. Do you see a company like this as a competitor?

You've got to be careful when you throw out this word Wintel. Sun's mission in life is not to go into the home, into CompUSA and Computer City, and replace your home PCs with Sun-based PCs. Our mission is to do corporate computing, enterprise-wide, Internet/intranet, and in doing so we come up against Intel machines that are deployed in certain desktops or as small servers.

These accounts aren't buying Compaq, though. They're buying Microsoft and Intel. Intel, to me, is probably one of the luckiest companies on earth. What if Microsoft tomorrow decided to put all its research and development, applications and tools behind the PowerPC chip? Microsoft just chose Intel, and Compaq has done the best job of delivering the Microsoft model. Compaq is making money and maybe some of the direct mail companies are, but show me besides Intel and Microsoft who makes money in the PC industry?

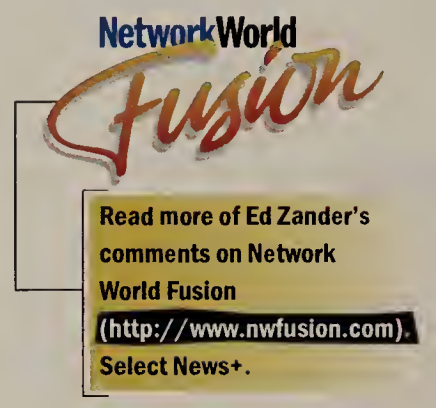
Will there ever be a Windows NT port to the SPARC platform?

No, we're not going to do it. It's a dumb idea. Ask Digital. People forget porting an operating system to an instruction set takes only a year to 18 months, but after that, ask how many apps are running on that platform, how many compilers, tools, etc. We have 10,000 apps running on SPARC Solaris that are specifically tuned and optimized.

The convergence of NT and the Pentium Pro chip does indicate that Wintel is gaining ground on Unix/RISC from a performance standpoint, don't you think?

They'll start off where they are today, which is the $25,000 to $50,000 small database and server markets. The thing that NT doesn't do yet, and the thing that these companies like Compaq don't do, is build business-critical servers. You're not going to bet your company on NT yet, no matter what they say.

The desktop version of NT is doing well in the commercial space; I'm not going to sit here and deny that. Windows 95 was a failure in corporate America, which moved to NT instead. Microsoft lucked out in that it had NT there. And they're now beginning to offer some of these quad-P6 NT servers. But the systems administration, network management, scalability, security and all of the tools around NT still don't lend themselves to an Oracle, SAP or mission-critical 24-by-7 marketplace.



With all the energy around NT, it's going to take a bite out of other products. NT is going to take a bite first and foremost out of HP's Unix business, out of Digital's Unix business and out of IBM's Unix business because they're offering NT. Maybe someday we'll wake up and there will be what I call "the alternative," and Sun will be it. I'll take my shot being the alternative.

How will Java help Sun sell more servers and copies of Solaris?

It obviously opens the door. . . as well as the minds and hearts of CIOs. A year or 18 months ago, if I walked into a CIO or CEO and started talking about the complexities, cost and management of PCs, I would have gotten thrown out. People are moving toward this network paradigm, so if they're doing that and they want to write in things like Java, right away we benefit from that. If they want to buy Java Workshop or Java development tools and begin writing their internal applications to Java and start deploying them, it all feeds on itself. We sell more intranet /Internet servers and video servers as well as servers that hold and manage Java applets.

And the whole idea of the Java client. . .people say it's never going to replace the PC, and that may be true. But if only 5% of PC users switch to a fixed application network computer environment, then we'll make a lot of money. ■

Tivoli

Continued from page 1

enough direction to MVS users," said Scott Harmon, vice president of marketing and strategy at Tivoli, which up to now has mainly focused TME 10 on servers. "But MVS-based NetView users represent over 85% of the network management market and about two-thirds of our business, so we won't be ignoring them."

SHARE NEWS

This comes as a relief to Anne Calouri, president of Share, which represents over 1,700 IBM companies.

"Our users were wondering when MVS was going to be a central part of what IBM and Tivoli were doing, because without MVS/NetView playing a central role, it was pointless," she said. "They seem to be heading in the right direction now."

Specifically, Tivoli is readying a TME 10 gateway that will let customers feed data from NetView's Resource Object Data Manager (RODM) into the TME 10 database and vice versa, Harmon said. RODM is a mainframe-based, object-oriented management repository.

The gateway will allow Tivoli's enterprise console or inventory application to pull information such as SNA topology or resource status from RODM, Harmon said. This will enable customers to manage mixed-vendor environments from either a central TME 10 console or from a distributed one.

What may irk some customers is that they will be forced to upgrade to NetView 2.3 or a later version to take advantage of the RODM/TME 10 integration.

"We are moving toward a common object-based data model, and that will be easier to do from RODM than older flat-file databases NetView used," Harmon said. "Users will have to deploy RODM to take advantage of that."

Tivoli's *Harmon says MVS won't be ignored.*

That may be a small price to pay. "We don't have a completely integrated package for managing distributed systems, and that's what we need," said Jerry Wetherington, systems coordinator at the University of Florida in Gainesville.

The company is also expected to deliver TME 10 tools that include improved integration of status, configuration, topology trouble ticketing and other applications between servers and mainframes.

In addition, Tivoli will introduce software that lets customers link the diverse management consoles that exist within NetView and TME. "This will enable users to tie Unix, Windows NT, mainframe and other management consoles together to share information across the enterprise," Harmon said.

He added that Tivoli will announce a new pricing structure for the IBM mainframe-based management software now under its jurisdiction, including NetView/390 and related products. This will be a simpler pricing scheme that should save customers money, but he declined to give specifics.

At the low end, Tivoli will introduce products for more effectively managing distributed assets across workgroup nets. For example, the company will introduce software distribution, local database and administration management tools, according to Harmon.

"We are aiming to give workgroup users enterprise-like management capabilities that they can then scale up if they need to," he said. ■

NetICs

Continued from page 1

of people how we did it,'' said president and cofounder Gary Vacon. ''The trick is to have the best low-cost ASIC engineering in the business,'' rather than starving the switches of buffer memory.

NetICs engineers, including Vacon, all came from Digital Equipment Corp. Vacon and cofounders David Fite and Ron Salett own 30 chip design patents between them.

Still, users are skeptical. They note that the NetICs switches have not shipped or been tested, and that the company does not have the name recognition, reputation, support infrastructure or deep pockets of its 10/100 brethren.

''Three hundred or $400 per port sounds good, but I contrast it against the fact that they are a start-up company and just getting established,'' said Larry Himmill, telecommunications technician at the Southeast Air Quality Management District in Diamond Bar, Calif., a user of Bay switches.

NetICs hopes to make a believer out of Himmill with its 12-port NS12110 and 16-port NS16110 workgroup and backbone switches. All ports on the NetICs switches can autonegotiate between 10M and 100M bit/sec speeds in either half- or full-duplex mode, Vacon said.

All 100Base-TX ports on the switches run at wire speed and support four groups of the RMON segment monitoring standard. The switches also feature a 1.2G bit/sec switching fabric.

NETICS AT A GLANCE

Founded.	October 1995
Headquarters	Acton, Mass.
Management	Gary Vacon, president; David Fite, vice-president; Ron Salett, vice-president
Employees.	Five ex-Digital Equipment engineers
Funding	private
Products	NS12110 and NS16110 autosensing, ''multimedia ready'' Ethernet/Fast Ethernet switches

PHOTO BY SHAWN HENRY

What may be most unique about the switches — aside from their price — is that they are multimedia-ready, Vacon said. NetICs has developed a feature called Priority Quality of Service (PQoS) that allows the switches to give priority to latency-sensitive packets such as voice and video.

With PQoS, users can define packets as high- or low-priority based on media access control (MAC) address or conversation pairs, or via 3Com Corp.'s Priority Access Control Enabled (PACE) technology. PACE lets net managers run real-time voice and video applications over switched 10M and 100M bit/sec Ethernet links by ensuring delay-sensitive traffic gets a higher transmission priority.

''We don't think you need cells for multimedia,'' Vacon said, referring to the common but diminishing belief that ATM is the only way to deliver real-time multimedia.

NetICs will demonstrate PQoS at the NetWorld+Interop show in Atlanta next month by bombarding a switch port with voice and video packets from a workstation, and frames from a frame generator/tester. The switch will ensure high-quality resolution by dropping only low-priority packets.

In addition to PQoS, the NetICs switches can configure up to 32 virtual LANs via port assignment or MAC addresses. Each switch supports 8,000 MAC addresses. One thousand VLAN policies can be defined and applied to the MAC addresses of end stations.

NetICs plans to add IP switching and 1G bit/sec Ethernet capabilities to its switches in the future, Vacon said. However, he was mum on time lines, configurations and other details.

The NS12110 and NS16110 will ship early next year. They will be sold through OEMs and distributors.

Contact NetICs at (508) 266-9888.

Senior Writer Jodi Cohen contributed to this story.

Performer

Continued from page 6

tools.

Application models can be thought of as a set of graphical descriptions, or diagrams, that are translated automatically into finished code.

Today, only a few high-end development tools offer this approach. TI's Performer brings this technology to component-based, department-scale applications that need to support growing numbers of users, transactions and data.

''You can start by building a GUI, then Performer reverse-engineers this into a model,'' said John Mann, vice president at The Yankee Group, a Boston, Mass. research company. ''You can operate off the model from then on to create a clean, well-designed application.''

Developers use three sets of Performer diagrams — for the user interface, the data design and the business rules — to create three different views of one underlying application model. Work done in any one diagram is captured in Performer's repository and is applied to the other diagrams automatically. A high-level scripting language is used at this stage of development.

An incremental code generator recreates only the new or changed parts of an application instead of the whole, so developers can quickly see the impact of a change. Finished applications are generated in C code.

Finally, Performer and TI's Composer enterprise tool set can exchange models, so development done in either tool can be moved to the other.

The product is a complete, tightly integrated tool set and includes Symantec Corp.'s C++ compiler; XDB Systems, Inc.'s Windows relational database management system; Performer development tools; and over 60 ready-to-use OLE Custom Controls from TI and third parties such as Sheridan Software, Inc. The product runs on Windows 95 and Windows NT.

Client code built with Performer runs on the same platforms; server code runs on NT and HP-UX.

The tool set works directly with several of the most popular relational databases, and with other databases via Microsoft Corp.'s Open Database Connectivity. Applications run over TCP/IP networks.

Performer is now in beta test and will be released this fall through TI and selected distributors. It is priced at $4,995.

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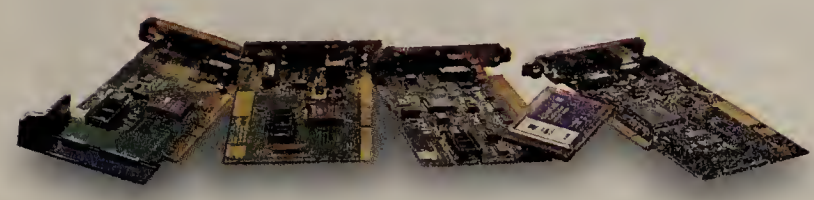

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NCD bets on Network Computer

X terminal maker jumps into new market as it integrates Java into gear.

By Ellen Messmer
Mountain View, Calif.

Network Computing Devices, Inc., which made its name in the X terminal business, is now jumping whole-hog into a brand-new market — the Java-based Network Computer.

In a strategy to be unveiled next week, Network Computing Devices (NCD) will announce it is integrating the Java Network Computer (NC) software architecture into its current line of Explora and HMX terminals for shipment by year-end.

"They're taking the X terminal hardware and reprogramming it for the Network Computer."

The cost of the new Java-enabled Explora NCs, which can be plugged in to VGA monitors and keyboards, is expected to be under $700. A Java upgrade to existing NCD terminals will cost $50 per seat.

The NC, a much-ballyhooed industry effort to build Java-based diskless and low-cost computers, is designed to run small applets or full-fledged applications downloaded from a server.

But unlike most NCs, which are based on a low-end CPU, the Explora line uses a processor only to support the display — in this case a PowerPC chip — and relies on an NT Server for its core intelligence. This server software allows X terminals to run Windows applications.

While vendors envision the NC being used by both consumers and businesses, NCD is squarely focusing its brand of Network Computers on the corporate intranet. The NCs are designed to be used for call centers, help desks and inputting clerical data — or anywhere there is demand for low-cost processing power.

Analysts said NCD's approach will give corporations more than just an NC.

"They're taking the X terminal hardware and reprogramming it for the Network Computer," said Dave Folger, program director for workgroup technologies at META Group, Inc., a consultancy in Westport, Conn.

The NCD X terminal can now access Windows applications through Citrix Systems, Inc.'s WinFrame server software. By adding Java, the user can do Windows, X programs, 3270 emulation and Java applications, all on one box, Folger said.

Sources at NCD also said they are in negotiations with IBM that may result in the company building an IBM version of the Network Computer.

©NCD: (415) 694-0650.

In-Site

NASA

Continued from page 1

upgrade. Not only is network traffic increasing in volume and variety, but Congress is ratcheting down NASA's budget.

JPL's goal is to squeeze more useful bandwidth out of its current international T-1 lines, each of which cost $700,000 per year. To get there, JPL is ditching the time-division multiplexers that anchor its T-1 network in favor of switches that run ATM over the same circuits. ATM will let NASA push more data through the same pipes by filling in the bandwidth gaps that otherwise go to waste when a nailed-up multiplexed channel is idle.

JPL's *Liu prefers ATM because he believes the T-1 mux will be phased out.*

While industry debate has raged over whether ATM at T-1 speed makes sense, NASA sees ATM as more than just a technology for carrying multimegabit loads.

JPL was attracted by ATM's ability to run voice, data and video traffic over a single wide-area link with optimum efficiency. Plus, the move is acknowledgment by NASA that adopting ATM is inevitable.

"The T-1 mux is going to be phased out at some point. Do you do it now or do you do it later?" said Joseph Liu, a network engineer with JPL's network technology development group. "NASA and JPL have tried to put a stake in the ground. This is the direction, and this is the future."

This fall, NASA will start a six-month phase-in of Northern Telecom, Inc. Passport ATM switches to handle voice, video and data traffic between JPL and its three Deep Space Network satellite dishes in Canberra, Australia; Madrid, Spain; and Goldstone in California's Mojave Desert.

The traffic includes data to and from space missions; voice among the satellite Earth stations; and NASA TV, which is live video coverage of NASA missions. "We're using ATM for what ATM was designed for: different types of traffic, different priorities," Liu said.

Five Passport switches will anchor the network, one at each of the Earth stations and two at JPL to handle the hub switching and to link to other NASA networks.

The switches sort traffic on the fly according to preset priorities. The most critical data is guaranteed to get through on given permanent virtual circuits (PVC) with guaranteed bandwidth — what is known as a constant bit rate (CBR) quality of service.

When there is no high-priority traffic, the switches ship lower priority traffic using the high-priority bandwidth. That cannot be done with standard T-1 multiplexed channels.

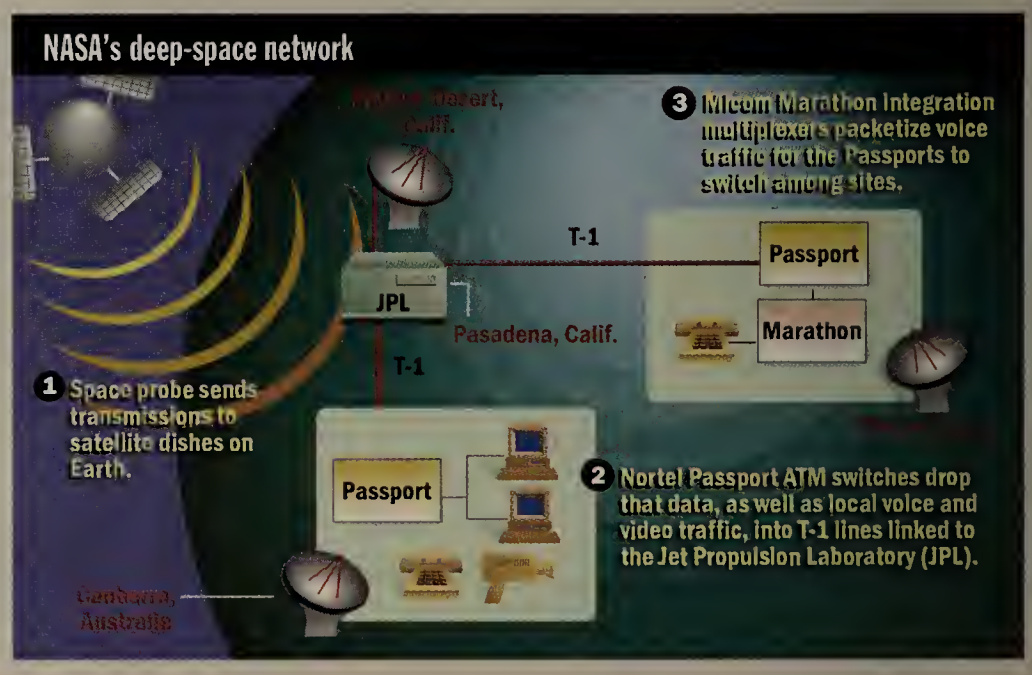
Because the Passport switch can handle ATM traffic and frame relay traffic simultaneously, NASA will save bandwidth needed for voice traffic by compressing that traffic and sending it as frame relay frames.

Micom Communications Corp.'s Marathon Integration Multiplexers compress the voice, squeezing 12 voice channels into a 128K bit/sec block of bandwidth. Normally, a single voice channel would take up 64K bit/sec.

Because the Nortel switch handles hybrid frame relay/ATM traffic, the frame relay voice does not have to be packaged into ATM cells, cutting overhead that would reduce throughput.

Each switch component is redundant and some components are backed up twice, Liu said. "It costs billions of dollars to send up a spacecraft, and we can't afford to lose communications links," he said, especially on manned missions. "NASA is very, very serious about human lives."

With the ATM decision, Liu thinks the agency can squeeze out another year and a half from the T-1s. Shifting NASA plans makes that just a guess. ■



WANs & Internetworking

Covering: Network Architectures and Management • Routers • Muxes, Remote Access Gear, Modems, PBXs and other CPE • Mobile Computing Products

Briefs

■ **Software Artistry, Inc.** *has rolled out a service to integrate* **enterprise support** *applications for Remedy Corp. customers. The service, available now, includes a bidirectional interface between Software Artistry's SA-Expertise application suite and Remedy's Action Request System help desk tool.*

Software Artistry: (800) 763-8278.

■ *Start-up* **RAScom, Inc.,** *which plans to specialize in* **remote access ISDN servers,** *has completed a first round of venture financing for $2.7 million led by Pioneer Capital and Charles River Ventures. This fall, RAScom plans to ship a stackable server that supports eight to 600 users and runs Microsoft Corp.'s NT Server.*

RAScom: (603) 898-5200.

■ *Multicast software start-up* **StarBurst Communications Corp.** *last week announced it had received an additional $6.1 million in financing from Integral Capital Partners, Canaan Partners and Greylock Management. Starburst expects to be granted a patent on its* **multicast file transfer technology** *by 1997.*

■ **Telco Systems, Inc.** *last week announced that Positron Fiber Systems, Inc. will distribute Telco's new add-drop* **Synchronous Optical Network** *multiplexer, SonetFOX, designed for extending carriers' SONET-based networks. The multiplexer features OC-3 interfaces, and is available in hub or remote node configurations ranging in price from $10,000 to $15,000.*

Telco Systems: (617) 551-0300.

■ **Groupe Sagem,** *the French company specializing in ISDN products for Apple Computer, Inc.'s Power Macintosh, last week announced it will start marketing its products in the U.S., starting with its Meet-Me-Light* **videoconferencing** *software.*

Vendors target 'Net, app management

BMC, Compuware roll out products, strategies to help users keep tight rein on resources.

By Jim Duffy

Two leading systems management vendors last week unveiled products and disclosed plans to help users keep a tight rein on their Internet and application resources.

Fresh off of its cofounding of the Web-based Enterprise Management (WBEM) initiative, BMC Software, Inc. rolled out software for its Patrol application management package. This software allows users to monitor the performance of Internet and intranet servers and applications from a Web browser.

Management maneuvers

BMC product plans
- Patrol Knowledge Module for Internet Servers
- Patrolwatch for Web Browsers
- Patrol knowledge module extensions to manage Internet-enabled apps and databases

Compuware strategies
- Focused effort on networked application management
- Includes EcoTools, EcoNet and EcoClient products
- Plans to add extensions to products, including Web support

BMC competitor Compuware Corp., meanwhile, said it will extend its EcoSystems product line to handle end-to-end networked applications management. The EcoSystems line includes the EcoTools, EcoNet and EcoClient software packages for management of servers, network and clients, respectively.

Both vendors are tapping into a wide-open market opportunity.

"Users are demanding that IT service them in a way that they can understand," said Donna Scott, program director at Gartner Group, Inc. in Stamford, Conn. "They want to know that their applications are up and available and performing, whether that's an order entry or Internet application."

BMC's new products are the Patrol Knowledge Module for Internet Servers and Patrolwatch for Web Browsers.

The knowledge module runs on NetScape Communications Corp., Microsoft Corp., Digital Equipment Corp., Sun Microsystems, Inc., Hewlett-Packard Co. and Oracle Corp. servers. It monitors the usage, throughput, availability and resource utilization of Web, File Transfer Protocol, Mail and News servers. It also monitors visits to each local Web page and calculates server response time and status.

Patrolwatch for Web Browsers extends the console operations of BMC's Patrol application management software to Web browsers. From a Patrolwatch console, users can monitor the status of all Patrol-managed applications, with full parameter display. Patrolwatch supports all Patrol knowledge modules, including the new one for Internet servers.

The Patrol Knowledge Module for Internet Servers costs $1,000. Patrolwatch for Web Browsers is offered free of charge until February, after which it will cost $495. Both products are available now.

The World-Wide Web is also on the mind of Compuware, but it is not only Web applications that the company intends to manage. Under its Network Application Management strategy, Compuware will extend the capabilities of its EcoSystems suite to provide performance optimization, event management, service-level management, capacity planning and fault management of any application running over a corporate network.

The extensions include integrating the piece parts of the EcoSystems line.

"That does provide some very nice functionality, particularly the end-to-end response time combined with EcoClient," said Paul Mason, research director for systems management at International Data Corp. in Framingham, Mass. "I don't know anybody else who can do that."

Other extensions, such as Web server management and object model interoperability between Unix and Windows NT, will be rolled out over time.

✆BMC: (800) 841-2031; Compuware: (810) 737-7300.

Remote access

Telepartner builds multifunction server

By Joanie Wexler

Farmington, Conn.

Telepartner International recently merged its remote access server products into a single gateway, an approach that analysts said should ease equipment management headaches.

The company has recast its TeleServer gateway as a multithreaded communications server platform onto which it has blended access to LAN file servers, Application System/400 hosts and mainframes. The result is TeleServer 2.0, which costs $9,700 to $14,000.

"Products like this help the IS department manage the diversity of remote users," said Bob Egan, a research director at Gartner Group, Inc. in Stamford, Conn. According to Egan, network managers are struggling to manage multiple product sets from different vendors.

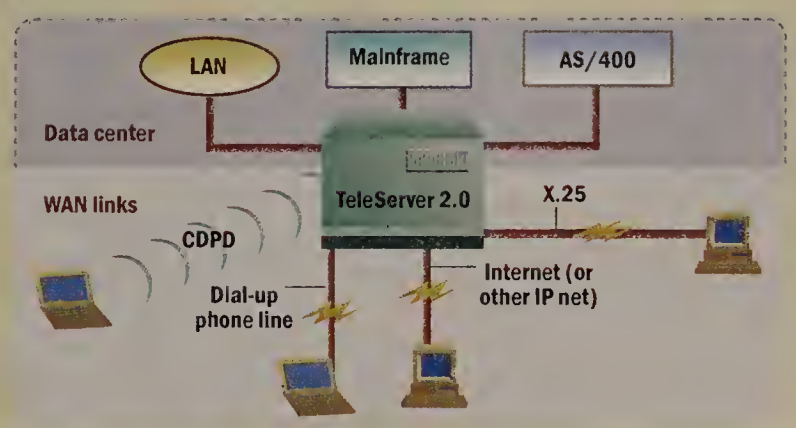
"The minute you combine functions into one box, management is integrated across all the individual components within that box," Egan said.

Brent Badgley, senior systems programmer at Telepartner shop American States Insurance Co. in Indianapolis, said he is simply grateful for the product's performance improvement. The previous TeleServer software was DOS-based; 2.0 runs the multitasking IBM OS/2, which alleviates memory problems, Badgley said.

Previously, "we had to disable some of the statistics-gathering functions because we were pushing [the TeleServer] to its maximum of 64 ports," he said.

Getting there from here

Telepartner's TeleServer communications gateway aims to reduce users' capital investments by bundling access to host and LAN resources along with support for many types of WAN links.



On the WAN side, Telepartner has added support for IP networks, including both the Internet and wireless Cellular Digital Packet Data nets. The IP nets join asynchronous and X.25 dial-up links as WAN access options (see graphic).

For running SNA over the Internet, "we carry the SNA protocol all the way to the client," which allows users to retain their ability to simultaneously print and display, said Bob LaRochelle, vice president of development at Telepartner.

Other 'Net terminal emulation options, such as tn3270, a telnet application, do not, he said.

Telepartner will add support for ISDN links, as well as the RAM Mobile Data and ARDIS Co. wireless packet nets, later this year, LaRochelle said.

Client software prices start at $165.

✆Telepartner: (800) 935-3270 or http://www.telepartner.com.

INTERNETWORKING MONITOR

Scott Bradner

The importance of occasional chaos

I have written in the past about the importance of standards, but one can go too far. What follows is extracted from my testimony as a witness for the American Library Association in opposition to the Communications Decency Act.

Judge Dalzell: And so what Mr. Baron just asked you about (a) hypothesizes that there is a plenary group that sets standards, and by setting standards, doesn't that then exclude the possibility of new technologies such as the World-Wide Web, which arose spontaneously, not even [on] these shores?

The Witness: There are many places [around] the globe where the development of standards and the control of the standards development process is seen as a strategic necessity on the part of some governments. And so the defining of what standards to use, how to develop them and [how to mandate them] is seen as strategic. And it is absolutely true that a too-strong environment saying all standards must come from standards group No. 2 has a serious impact on innovation. The Web rose out of a hole. The whole concept of the Web rose out of a need that we didn't know we had. We didn't know we had this lack of ability to do easy browsing because we didn't have the concept of easy browsing. This was something that sprung out of innovations on some parts of some individuals.

It was not part of a standards effort. It was people doing something. It caught on because people saw it as useful.

There are other holes in the 'Net. We don't know what they are. There are other needs that we don't know we have. And certainly being too reliant on "we only do those things which are standard" will stifle that innovation, and it would be very bad for us. We went through many years of telecom where we did not have, let's say, rapid innovation because of that kind of centralized standards development constraint.

Judge Dalzell: And indeed, isn't the whole point that the very exponential growth and utility of the Internet occurred precisely because governments kept their hands out of this and didn't set standards that everybody had to follow?

The Witness: The U.S. government and many other governments attempted to mandate a particular kind of protocol to be used on worldwide data networks, and this is the [Open Systems Interconnect] protocol suite.

That particular suite of protocols has failed to achieve market success. What achieved success was the very chaos that the Internet is. The strength of the Internet is that chaos. It's the ability to have the forum to innovate.

Judge Dalzell (in the opinion granting a preliminary injunction): True it is that many find some of the speech on the Internet to be offensive, and amid the din of cyberspace many hear discordant voices that they regard as indecent. The absence of governmental regulation of Internet content has unquestionably produced a kind of chaos, but as one of [the] plaintiff's experts put it with such resonance at the hearing: "What achieved success was the very chaos that the Internet is. The strength of the Internet is that chaos."

Just as the strength of the Internet is chaos, so the strength of our liberty depends upon the chaos and cacophony of the unfettered speech the First Amendment protects.

Disclaimer: Some would say that Harvard understands chaos all too well. Even if that might be true, the above are my opinions (presented under oath).

Bradner is a consultant with Harvard University's Office of Information Technology. He can be reached via the Internet at sob@harvard.edu.

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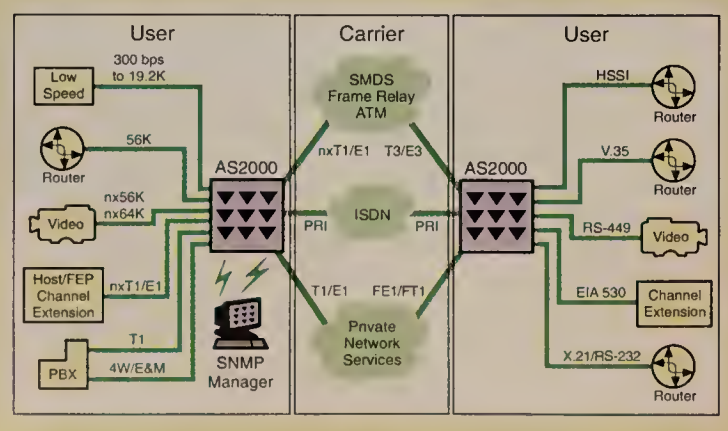

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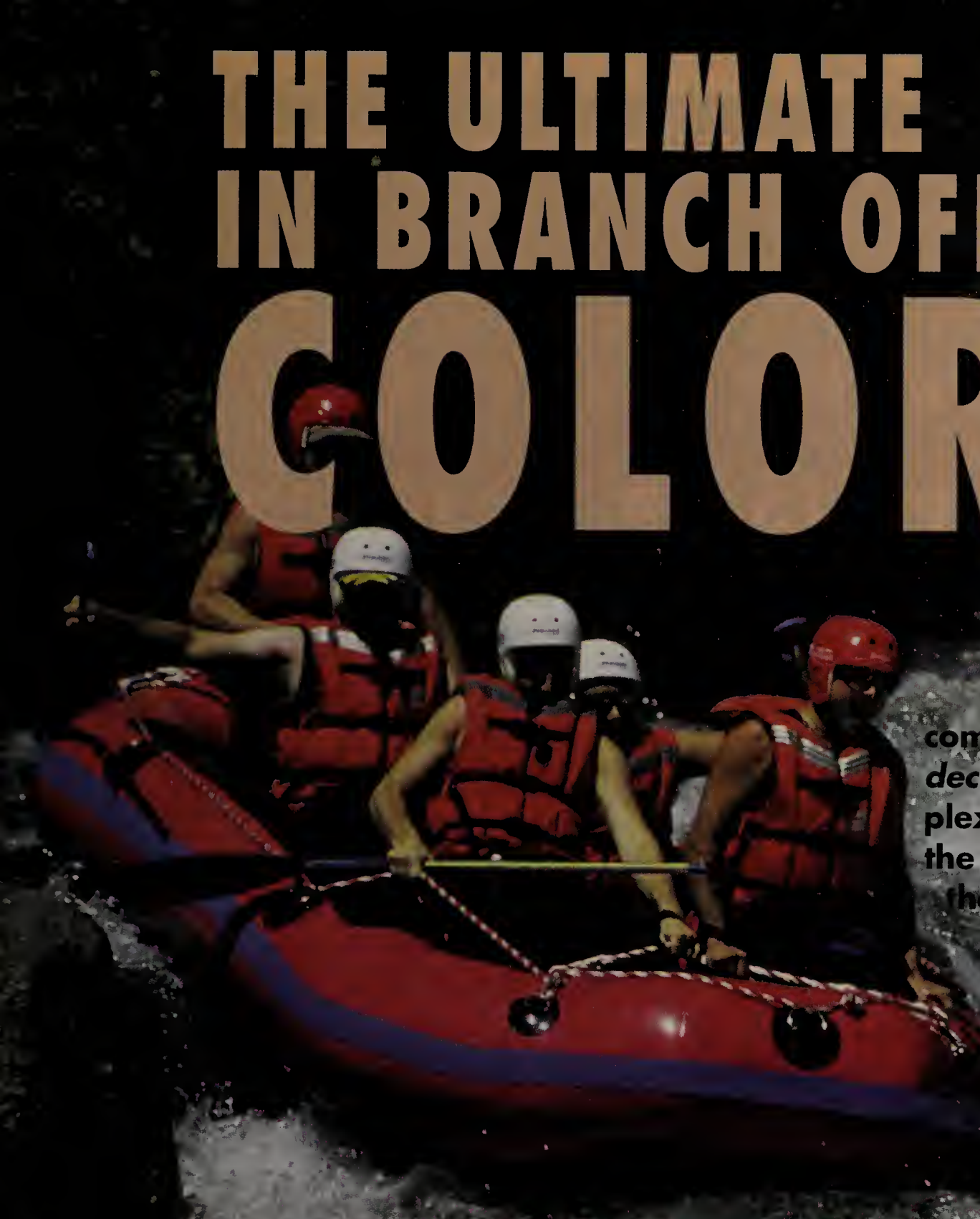

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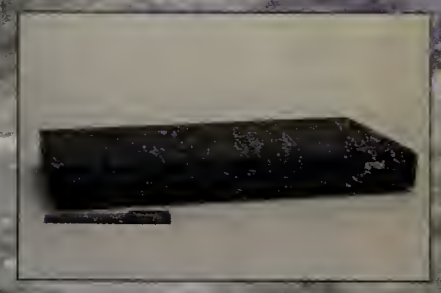

The landscape of remote access is changing and Colorado is equipped to handle the most demanding twists and turns. It is available with an Ethernet or Token Ring LAN interface and supports three WAN connections and an optional ISDN Basic Rate Interface. Another model, Colorado Plus, supports all the features of the Colorado but includes two Ethernets or an Ethernet and a Token Ring interface.

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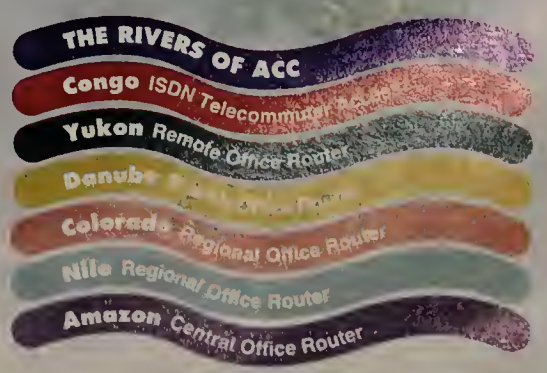

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Carrier Services

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Briefs

■ **Bell Atlantic NYNEX Mobile** *last week said it has created a* **new pricing plan** *for cellular users in Massachusetts, Rhode Island and New Hampshire. Using MobileReach USA,*

WHAT A DIFFERENCE A DECADE MAKES

Cellular service revenues

1985.....$354.3 million
1995.....$16.5 billion

SOURCE: CELLULAR TELECOMMUNICATIONS INDUSTRY ASSOCIATION, WASHINGTON, D.C.

customers in those states can make cellular local and long-distance calls from any spot in the carrier's East Coast service area to anywhere in the U.S. for a single air-time rate of 49 cents per minute.

In other wireless news, **AT&T Wireless Services** *and* **GTE Mobilnet** *have signed an agreement whereby they will interconnect their* **Cellular Digital Packet Data (CDPD)** *networks. Come October, mobile data users in each of the carrier's territories will be able to roam throughout the other's service areas and place calls for a single price that will appear on a unified bill.*

■ *The* **Canadian Radio-television and Telecommunications Commission (CRTC)** *last month proposed to* **drop tariff filing requirements** *for long-distance carriers. The move parallels a proposal by the U.S. Federal Communications Commission, though current tariff practice in the two countries differs slightly. The CRTC now automatically approves long-distance tariff revisions only if they reduce rates. The FCC allows both increases and decreases to take effect with little or no review.*

■ **US WEST, Inc.** *said it will build a* **public voice messaging** *network using Octel Communications Corp.'s OcteLink messaging system. OcteLink is a store-and-forward arrangement under which messages are addressed using the recipient's phone number, and the recipient can choose to reply or forward messages similar to premises-based voice-mail systems.*

Net managers get free conferencing reviews

LINK-VTC posts quarterly results of internal tests on Web.

By Joanie Wexler
Boulder, Colo.

Network managers in the market for desktop conferencing systems can now find free product evaluation assistance on the World-Wide Web.

LINK-VTC, Inc., a provider of videoconferencing bridging and transport services, is posting self-conducted quarterly evaluations of desktop systems on its home page (http://www.indra.com/link-vtc/).

The reason is simple: The company has to evaluate all end-user systems, anyway, to help customers configure their gear to work with the LINK-VTC multipoint conferencing bridges. The provider created the Desktop Videoconferencing Lab to do the testing and figured it might as well help out novice users by making the results freely available to them.

"We find that video quality and price are two of the main things users care about," said Art Zeile, vice president of sales and marketing at LINK-VTC. Thus, system characteristics related to video quality weigh heavily in the tests, he said.

For example, this quarter, the company evaluated PictureTel Corp.'s Live50 Version 1.6 (for Windows), Intel Corp.'s ProShare 200 Version 2.0 (for Windows) and White Pine Software's CU-SeeMe V2.0 (for the Macintosh). LINK-VTC reported that CU-SeeMe has very poor video quality on any circuits of lesser grade than ISDN, branding it virtually unusable on a 28.8K bit/sec modem connection.

How well different vendors' systems speak H.320 — the family of standards for video compression — also relates directly to video quality and is another LINK-VTC test area.

Just because a system supports H.320 does not mean it is immediately interoperable with other vendors' products, explained Jim Herbert, director of education at the International Teleconferencing Association in McLean, Va. "There are always some detailed configurations to take place," he said. This lack of plug and play among systems has limited the growth of the conferencing market, he said (see graphic).

A user expert said the LINK-VTC service should be helpful for neophytes, though firms that have already bought systems tend to stick with the same vendor.

"A lot of people just getting into the industry are overwhelmed by the [breadth of] options and are nervous about putting their careers on the line with these decisions," said Steve Molik, multimedia coordinator at Owens Corning Corp. in Toledo, Ohio, a PictureTel shop. Owens Corning supplements its own WAN with LINK-VTC services when it maxes out the bridging ports in its own equipment. The LINK-VTC reports include at-a-glance laundry-list ratings of as many as four stars for "excellent" on installation and support, operation, features and pricing. They also provide qualitative summaries.

The only "poor" rating this quarter went to Intel for technical support on installation. Maybe that is because Intel puts all its emphasis into installation manuals, for which it earned four stars, rather than into live bodies.

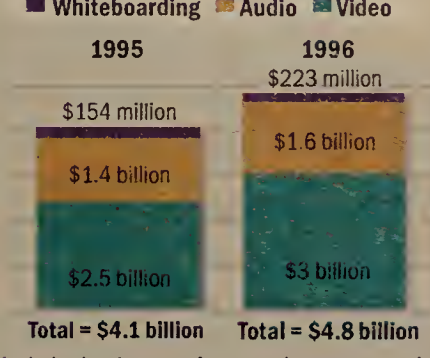
PictureTel also garnered four stars in the manuals category and earned kudos for straightforward installation, which took the lab about an hour. LINK-VTC noted that one PictureTel drawback is its lack of support for the T.120 data-sharing standard.

©LINK-VTC: (800) 546-5882.

Uphill struggle

Difficulty in getting multivendor systems to interoperate continues to limit conferencing growth. LINK-VTC addresses this issue in its free evaluation reports.

North American teleconferencing revenues' slow climb*



* Includes hardware, software and transport services

SOURCE: INTERNATIONAL TELECONFERENCING ASSOCIATION, MCLEAN, VA.

AT&T turns to international callback to extend SDN

By David Rohde
Basking Ridge, N.J.

In a classic case of "if you can't beat 'em, join 'em," AT&T is about to employ a technique called international callback to cut users' overseas calling costs.

The scheme will be used when AT&T introduces SDN Alternate Network Access for customers of its popular Software Defined Network service.

Under the offering, employees of SDN user companies traveling overseas will be instructed to call a number in the U.S. to obtain a U.S. dial tone for a call to another country. In this fashion, employees can avoid notoriously expensive international direct-dial rates when the call originates overseas.

The irony? AT&T opposed international callback before it was ruled legal by the Federal Communications Commission in June 1995. International callback at the time was being pushed by smaller carriers who had found a new market niche.

Following current market trials, AT&T will make SDN Alternate Network Access available in countries where primary carriers are not part of the AT&T-led WorldSource consortium, said Mike McKenzie, AT&T's deputy director of international voice services.

WHAT IS UNCOMPLETED CALL SIGNALING?

A caller in a foreign country calls a computerized device in the U.S. but hangs up before the call is completed. The device places a return call providing U.S. dial tone billed at U.S. rates. The FCC ruled this international callback technique legal in June 1995.

In WorldSource countries such as Japan and Hong Kong, AT&T already offers WorldSource Virtual Network Service (VNS), which essentially extends SDN capability beyond U.S. borders. Likewise, in conjunction with four European carriers, AT&T offers Uniworld VNS, which has been successfully trialed by companies such as 3M Corp. (*NW*, July 8, page 17). But McKenzie said that leaves many countries where callers still need to obtain SDN features such as abbreviated dialing and lower on-network rates to company locations.

"We are trying to extend U.S. SDN capability through whatever countries we possibly can," McKenzie said. Also eligible for the service are Tariff 12 users, whose AT&T billing plans generally incorporate SDN-like functionality.

Like the smaller carriers, AT&T's international callback scheme involves uncompleted call signaling (see graphic).

Both AT&T and the other carriers must be careful to comply with an FCC directive that disallows the technique if the foreign country where the caller is stationed frowns on it.

Notably, that includes China and India, according to the FCC. ■

NetworkWorld Fusion

See how one beta user helped change AT&T's SDN for the better, on Network World Fusion (http://www.nwfusion.com). Select News+.

SOME WORDS OF ADVICE ABOUT DSUs FOR YOUR INTERNET ACCESS...

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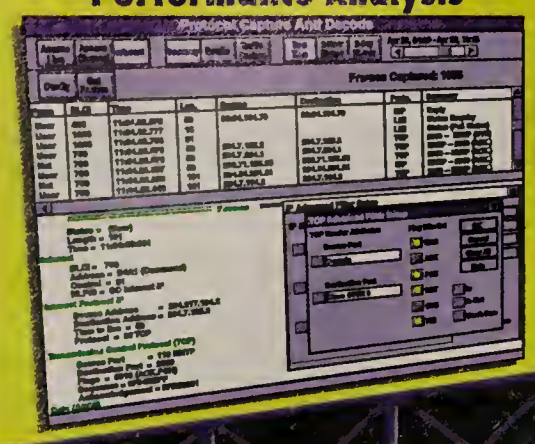

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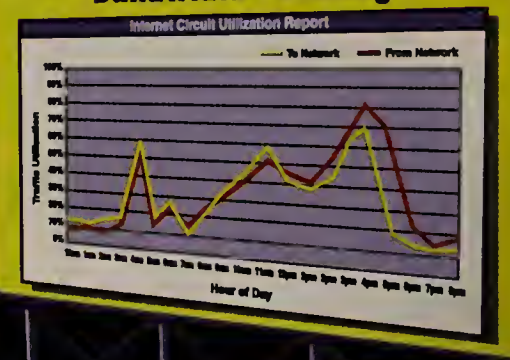

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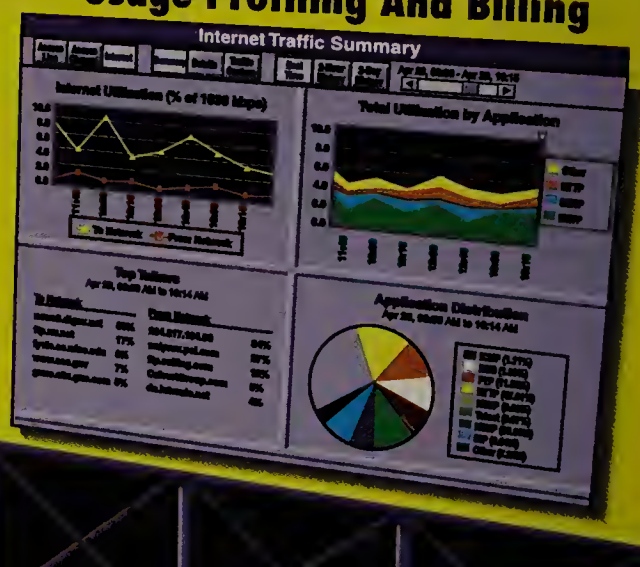

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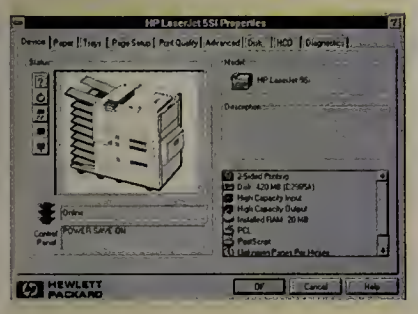
Briefs

■ **Compaq Computer Corp.** *has rolled out* **net management** *software that lets its customers configure and monitor a mix of Compaq gear, including products obtained via the acquisitions of NetWorth, Inc. and Thomas-Conrad Corp. Previously, customers had to use separate management tools for each vendor's products. Netelligent Management Software 1.0 is a Simple Network Management Protocol-based application that monitors LAN devices and alerts net managers of a performance problem. The application is bundled free with all manageable Netelligent networking devices.*

Compaq: (800) 345-1518.

■ **Hewlett-Packard Co.** *last week unveiled* **printer management** *software for Windows NT networks. HP JetAdmin for Windows NT, through the new Windows NT 4.0 interface, provides easy installation and remote management of printers connected to Windows NT 3.51 and 4.0*



networks. The software includes support for Dynamic Host Configuration Protocol for easier management in TCP/IP networks. HP JetAdmin for Windows NT is available now free of charge via HP's Web site.

HP: (970) 339-7009.

■ **Intel Corp.** *last week announced plans to introduce a new* **LANDesk product for help desks** *by October, which will work with current desktop management tools for remote control and diagnostics. It will include a knowledge base and problem-tracking and trouble-ticketing features. A demonstration is scheduled for next month.*

Intel: (800) 538-3373.

Server gets PowerPC boost it needs

IBM puts powerful processor at heart of its latest and most functional RS/6000 models.

By Ben Heskett
Somers, N.Y.

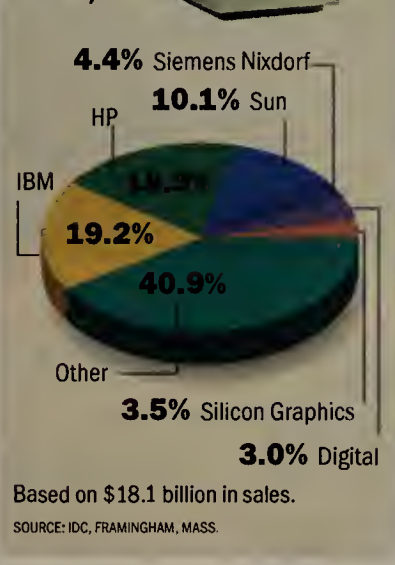
In 1991, IBM, Apple Computer, Inc. and Motorola, Inc. said they would revolutionize computing with their jointly developed PowerPC chip.

It hasn't happened yet.

That, proponents say, will change. To beef up the PowerPC's server role, IBM last week announced upgrades to its PowerPC-based symmetric multiprocessing (SMP) RISC System/6000 line, basing them on the PowerPC 604 112-MHz chip. Analysts said previous SMP RS/6000 configurations were "dogs," but that may change with the latest upgrade.

IBM comes out on top

IBM, with its RS/6000 (below), grabbed the biggest piece of the 1995 worldwide mid-range Unix server market (RISC-based).



Based on $18.1 billion in sales.

SOURCE: IDC, FRAMINGHAM, MASS.

"It took longer than we had hoped it would [to implement higher performance chips], but we felt all along the right answer was to deliver a solution that the customer could rely on," said Mike Kerr, a worldwide product manager for IBM's RS/6000 division.

IBM also introduced an SP 604 High Node two- to eight-way multiprocessing RS/6000 that can serve as a node in an SP massively parallel system.

In addition, IBM updated its clustering software. A new feature in the High Availability Clustering Multiprocessing (HACMP) software allows an administrator to reconfigure a cluster without taking the system offline.

PowerPC too weak?

PowerPC microprocessors are only now reaching the performance levels of some of their competitors. And those faster processors will not find their way into servers until year-end at the earliest.

The PowerPC is clearly not keeping up. For instance, a recent TPC-C online transaction processing benchmark between an UltraSPARC system and an R30 based on the PowerPC 601 chip showed that the Sun Microsystems, Inc. box offered three times the performance of the RS/6000.

"Are they behind? Absolutely, but I think by the middle of next year they'll be right in the middle of the game with UltraSPARC and PA-8000 and Alpha, and the difference will be negligible," said Jon Oltsik, an analyst with Forrester Research, Inc., a Cambridge, Mass.-based consultancy.

The gap may close with the announcement last week of desktop systems with a 225-MHz PowerPC chip by Firepower Systems, Inc.

IBM officials said the chip would be in RS/6000 systems by the end of this year at the earliest. So it could be 1997 before the PowerPC starts closing the server gap.

The latest RS/6000 models will be available by the end of this month. Prices for the 112-MHz servers start at $25,000. Customers with RS/6000 models based on the 601 chip will receive free upgrades.

PowerPC implementations in Apple and IBM systems currently support Apple's MacOS and IBM's AIX brand of Unix. Motorola desktops and servers, called PowerStack, run Windows NT and Sun's Solaris as well. A full-throttle effort is under way at Motorola to get developers to port Windows NT applications to the PowerPC.

Biting questions about Apple

Despite IBM's efforts, the linchpin of the PowerPC effort is still Apple, which uses the chip to power almost 3.5 million Power Macintoshes. IBM's chip consumption is no more than a tenth of that, according to analysts.

With Apple fighting for survival, customers may be wondering if they should invest in such a volatile platform. "That's clearly a problem," said Nathan Brookwood, a microprocessor analyst with Dataquest, Inc., a San Jose, Calif.-based consultancy.

"When you, the customer, have based your computing world on a proprietary environment and you're worried about the proprietary environment's principle vendor being around for the long term, that is really a bad kind of equation," Brookwood said.

✆IBM: (800) 426-2255.

UB taps into growing token-ring switch market

By Jodi Cohen
Santa Clara, Calif.

UB Networks, Inc. has rolled out its first token-ring switch, which is aimed at customers looking to alleviate congestion in their shared networks.

The GeoRim/T — a relabeled version of IBM's 8272 — is an eight-port workgroup switch that can support a mix of 4M and 16M bit/sec full-duplex token-ring connections to segments, individual users or heavily used file servers. The switch supports more than 4,000 media access control addresses, and can be managed by any Simple Network Management Protocol-based application.

Download our reviews of token-ring switches from Network World Fusion. From the main menu, select News+.

The device features a slot that can house an FDDI or 155M bit/sec Asynchronous Transfer Mode uplink module for backbone connections, which UB will roll out by year-end. Customers can also use the slot to increase the device's token-ring port count to 12 with a four-port expansion module UB expects to ship this summer. The switch can operate in either store-and-forward or cut-through mode.

TOKEN-RING REVENUE ON THE RISE

Worldwide revenue in the token-ring switch market is expected to triple from $41.7 million in the first quarter this year to $125.8 million in the first quarter next year, according to the Dell'Oro Group, a consultancy based in Menlo Park, Calif.

Esmerelda Silva, an analyst at International Data Corp., a market research firm in Framingham, Mass., said the new switch rounds out UB's token-ring offerings. "This is a move to satisfy those customers who aren't ready to move from shared token-ring to ATM," she said.

Also on the token-ring side of the house, UB announced the EMPower Supervisor management module for its GeoLAN family of token-ring hubs. In addition to supporting 10 Remote Monitoring groups, the module has an optional roving port that can be applied to as many as 16 rings under remote software control.

RMON information can trigger corrective actions by communicating with applications at the EMPower console. Pricing for the GeoRim/T switch starts at $700 per port and the device is available now. The management module is priced at $7,000 and will ship in August.

✆UB: (408) 496-0111.

A Desktop That's Actually Capable Of

Talk about considerate. Beyond having a thermal sensor that tells you if it's too hot, the new Compaq Deskpro will warn you if its hard drive's about to fail anywhere. It's all part of what we call the next generation of Intelligent Manageability. Among other things, it

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allows you to take inventory of all your hardware and software from one location. In case of hard drive failure, it backs up your data on the network; and now, thanks to our new PD-CD drive backup, it also preserves your data locally. There's even a sensor in the hood that alerts the support desk if anyone's tampered with it.

Intelligent Manageability is still based on open industry standards that ensure compatibility and integration with any network. Our partnerships with Microsoft, Novell, Intel and others give IS managers a broader range of integrated solutions. And to minimize installation and your configuration time, we provide an upgradeable integrated NIC and network-ready software which protects your investment and allows for growth. Ultimately what you get with Intelligent Manageability is lowered cost of ownership. Add to that a three-year warranty, plus dedicated toll-free technical support that's open for business seven days a week, 24 hours a day. Control. It's what makes the new Compaq Deskpro so hot. In a cool kind of way. For more information, visit us at www.compaq.com or call 1-800-392-8883.

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12. **Learn from early adopters — what switching strategies have they adopted?**

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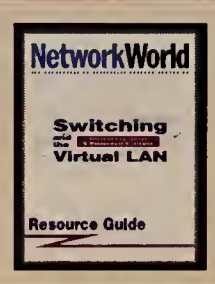

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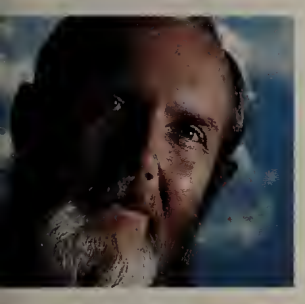
Playing standards game with ActiveX

Microsoft Corp., in true P.T. Barnum spirit, believes no one ever went broke by underestimating the intelligence of computer users, network administrators and chief information officers.

I've previously commented on the Redmond company's version scamming (i.e., if NetWare is at Version 4, we better make Windows NT Version 4 also to avoid the impression that our product is inferior) and self-declared standards.

Well, it looks like Microsoft is at it again.

Back in the dark ages before Windows 3.1, Microsoft gave us Direct Data Exchange (DDE), which became NetDDE in Windows for Workgroups. DDE was painful to use and NetDDE was even more so. Rather than dump them and adopt a standard, though, Microsoft created OLE.



Dave Kearns

This was still not the easiest thing to use, so Microsoft created the Visual Basic Control (VBX) and the OLE Control (OCX) as plug-ins for programmers. For some reason, OLE and OCX merged into ActiveX — more of a name change than any technological improvement. Springing forth from this, though, was the Common Object Model (COM) and Distributed COM (DCOM).

If you didn't follow all of that, don't worry. It only serves to show that ActiveX and DCOM are born and bred Microsoft concepts developed with little or no input from anyone outside the company.

Now objects have been with us since the introduction of object oriented programming (OOP) in the late 1980s. In 1991, a group of computer vendors created the Object Management Group (OMG) and defined the Common Object Request Broker Architecture (CORBA), so these programming objects could be shared among different applications, operating systems and hardware platforms.

Tip of the week

Ever wanted to print out an entire Windows help file or more than just a single topic? If so, get the free evaluation copy of SMARTDOC, available at http://www.smartcode.com/isshtml/smtdoc.htm.

Today, there are over 600 OMG members, including software vendors and users. Conspicuously present on the list is Microsoft.

Since ActiveX is Microsoft's implementation of programming objects, and since the company is an OMG member — and presumably supports CORBA — you would think it would make sense for ActiveX to be CORBA-compliant. Of course it would, and in an attempt to win public acceptance, Microsoft has announced that it is "...fulfilling its vision of openness for ActiveX by transitioning specifications and appropriate technology to an industry-standards body."

So OMG is getting control of ActiveX, you might think. Well, think again. It might be OMG, or it might be the Internet Engineering Task Force or another group. But it might be a brand-new organization, too.

Open standards, arrived at by industry-wide groups of vendors and users, are the only way to promote the healthy growth of the computer and network industry. A look at the 19th-century history of the oil, steel, coal and railroad industries will show you what happens when one man and one company are allowed to have the type of control Bill Gates and Microsoft are seeking.

Kearns, a former network administrator, is a freelance writer and consultant in Austin, Texas. He can be reached at dkearns@msn.com

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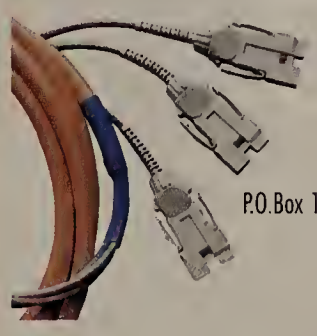

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StreetTalk applications hitting the street

Banyan and partners focus on software management, remote access; products to defray costs, give more control.

By Christine Burns
Westborough, Mass.

Banyan Systems, Inc. this week will roll out a group of products that build on its StreetTalk directory service to help lower the cost of administrating enterprise networks.

The products are based on technologies licensed from third parties, and together give administrators better control over network software and remote access.

Bill Johnson, Banyan's vice president of product marketing, said StreetTalk already cuts network administration costs by providing a central point of control. However, he said that between two and 10 times the original cost of a desktop machine is still spent administering it and the software running on it.

"These products will defray that cost by giving managers control over software usage and remote access," Johnson said.

NetWizard is a new StreetTalk-enabled software distribution tool, based on technology licensed from Attachmate Corp. It uses StreetTalk's naming scheme to let administrators automate software distribution, track software and hardware inventory, meter software usage and remotely configure workstations.

To help administrators track software usage in order to stay in line with licensing agreements, Banyan has teamed with LANShark Systems, Inc. to introduce StreetLegal for StreetTalk. The software-metering product lets network managers monitor and control software utilization throughout the network via StreetTalk.

Banyan's *Johnson says new products should lower costs.*

For better control over remote access capabilities, Banyan revised its Remote LAN Node (RLN) for StreetTalk. While the previous version had some ties with StreetTalk, Version 2.0 stores RLN user information as StreetTalk attributes, which means remote users only have to log in once to get access to any network resource. Administrators can use existing StreetTalk tools to manage remote users since all information about them is contained in the directory.

Banyan has also pumped up its TCP/IP Applications Suite, which is based on technology licensed from Ipswitch, Inc. The new features consist of Windows client software for transferring files on the Internet via File Transfer Protocol; support for Windows NT clients; and a new user interface. Also included is a 5250 emulator for AS/400 connectivity and a diagnostic utility for simplified management of TCP/IP nets.

The products represent a strong show of support for StreetTalk as a platform around which networked applications can be built, said Glenn Ben-Yosef, president of consultancy Clear Thinking, Inc. in Boston. "Developers write to StreetTalk because they know integration will make their product orders of magnitude easier to use due to the centralized control the directory offers," he said.

NetWizard is available now starting at $690 for a 10-user license. StreetLegal is available electronically free of charge to users who only want to monitor Banyan software. TCP/IP Application Suite 3.0 and RLM for StreetTalk 2.0 will be available in September. Prices will start at $2,795 for a 20-user license of TCP/IP Application Suite 3.0 and at $3,195 for an 8-port version of RLM for StreetTalk 2.0.

✆Banyan: (508) 898-1000.

The Net Results column by Skip MacAskill and Melinda Le Baron will return next week.

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Briefs

■ **LBMS, Inc.** *of Houston has released Version 3.5 of Process Engineer, a graphical tool set for managing* **application development** *processes.*

The release includes improvements designed to make the product easier to use, support for additional electronic mail transports, and interfaces to popular third-party project management tools.

The product's process library will be extended with templates to support object-oriented and Internet development processes, among others.

LBMS: (800) 231-7515.

■ **Oracle Corp.** *last week released an update to its* **systems management** *software that includes a software development kit (SDK).*

Oracle Enterprise Manager 1.2, included at no charge with the Oracle7 Release 7.3 database, works with the Oracle Parallel Server on parallel computers, Oracle's Advanced Replication feature and Oracle Software Manager, which automatically distributes software.

The SDK lets third-party vendors and customers link other products with Enterprise Manager. The management software now runs on Windows 95 in addition to Windows NT.

Oracle: (415) 506-7000.

■ **ParcPlace-Digitalk, Inc.** *of Sunnyvale, Calif., has released Parts for Java, a visual development tool for building* **Java** *applications.*

The product includes a palette of components for building applications, a class browser for editing source and binary files, and the Component Wizard for creating new components. Parts for Java, available now, is priced at $99.

ParcPlace-Digitalk: (800) 759-7272.

MESA declares a groupware detente

JumpStart allows replication between Notes and Exchange.

By Carol Sliwa and Barb Cole
Newton, Mass.

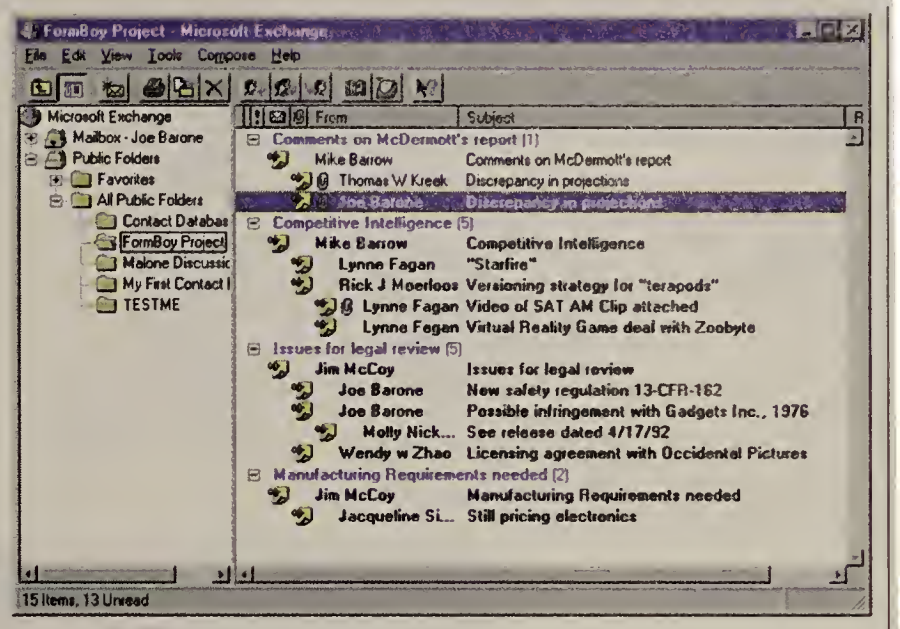
The MESA Group this week will launch JumpStart, software that will replicate and synchronize information between Lotus Development Corp. Notes and Microsoft Corp. Exchange groupware.

JumpStart will convert most Notes databases to Exchange folders, and vice versa, retaining discussion threading and responses as well as converting attachments. It should prove useful, for example, to Notes customers that are testing or migrating to Exchange.

MESA has already gained a foothold in the groupware market with its Conference+ software, which adds folders, replication and application development capabilities to Microsoft Mail.

With JumpStart, the company is aiming for a broader market, trying to solve the thorny problem of groupware coexistence.

"We're not tied necessarily to a Microsoft, Lotus or Netscape platform, but we provide objective coexistence across all platforms," said Eric Schultz, MESA's chairman and chief executive officer.



With JumpStart, *Notes discussion databases may be converted to Exchange format (shown here). The software also translates Exchange databases into Notes.*

Initially, MESA is focusing on the largest market with Notes and Exchange. But the company plans to accommodate Netscape's news and Web servers down the road.

In the future, MESA plans to provide forms and applications coexistence.

Ed Jennings, product development manager at Entex Information Services, Inc., a large systems integrator in Rye Brook, N.Y., said JumpStart could be useful for him.

"IT organizations see good reasons to run both [Notes and Exchange], and they want something to connect them," Jennings said. JumpStart may help eliminate the fighting over which messaging platform will be the corporate standard, he said.

Analysts were enthusiastic, as well.

"Several of our customers are telling us that they will have Notes and Exchange in place and would like to create an environment where there is interplay between them," said Jim Payne, marketing manager at Control Data systems, Inc., an Arden Hill, Minn.-based provider of messaging software that is considering bundling JumpStart with a future offering.

"There's a phenomenal need for products that support cohabitation, and JumpStart is the first product we've seen that does that," said Tom Austin, an analyst with Gartner Group, Inc., in Stamford, Conn.

JumpStart is a server-based package, but also includes a client-based administration tool. MESA will ship the software, which runs on Windows NT and Windows 95, by Sept. 1. Pricing has not been set.

✆MESA: (617) 964-7400.

Vendors extend high-end tools with object technology

By John Cox

Two vendors have announced new or planned products that further extend their object-oriented tools for building large-scale, network applications.

Sapiens International Corp., with North American headquarters in Research Triangle Park, N.C., has released ObjectPool, a tool set for building client/server applications that interact with mainframe-based data. Separately, Compuware Corp. last week outlined the future direction of its Uniface application development tool set, including software to model high-level business objects representing orders and customers.

SAPIENS' OBJECTPOOL

What it is: A repository-based, object-oriented tool set for graphically building large applications

Benefits: Cuts development time; lets PC-based applications easily work with existing legacy data, applications and transactions

Platforms: Various IBM mainframes now; Unix platforms in the fall; Windows NT by April 1997

Price: Starts at $100,000

Sapiens' ObjectPool incorporates key elements of the company's earlier mainframe-based development tool set, enabling ObjectPool applications to work easily with mainframe systems.

Developers use a set of graphical screens for laying out an application, and an extensive set of ready-to-use objects for presentation, data access and other tasks. Using the graphical user interface (GUI) screens, developers also create high-level business rules that act like instructions for the objects.

Objects and rules are stored in one or more pools — server-based repositories used in both building and running the final application. Developers build PC-based applications with such tools as Microsoft Corp.'s Visual Basic. These applications simply send messages to the ObjectPool components, which then process them and access mainframe or other systems as needed.

Uniface turning seven

While Compuware is not quite ready with new products, executives at the Farmington Hills, Mich., company outlined plans for Uniface Seven, which will enter beta testing this fall.

The current product, Uniface Six, is based on a development repository that stores graphically created application models. Finished applications are generated by Uniface from these models.

The next release will let developers combine low-level objects such as data models and fields, into more generalized or abstract objects, such as "order." These higher level objects, called application services, can then be combined with others and reused in applications. This should help developers build complex applications more quickly. Other changes will let Uniface applications be generated for the Internet and World-Wide Web.

In addition, the company is readying a set of reusable object libraries and application frameworks that developers can use as the basis of a new application.

✆Sapiens: (800) 858-9473; Compuware: (800) 521-9353.

There's more Info on Network World Fusion:

- **Product overviews from Sapiens and Compuware**
- **A FAQ about object-oriented programming**
- **A link to the Object Technology User Group**

From the main menu, select News+.

SHARED LOGIC

No longer just an E-mail administrator

Messaging and groupware managers have long been grappling with a serious dilemma: Which standards, products and technologies do you really need to devote time to learning?

Where are the boundaries when plain old E-mail becomes groupware, secure messaging, intranet messaging or electronic commerce? Take your pick.

Most of us are relatively young and eager, at least in spirit. We accept that we must continually learn new skills, that we never actually stop paying dues. However, we also face logistical constraints in that we cannot exceed an 8- to 12-hour workday for long stretches of time and have not perfected the art of being in two locations at once.

During 1994 at Rapport Communication, we worked to expand our messaging seminar offerings to encompass Internet messaging and suddenly found ourselves burning major midnight oil to successfully develop and market a full Internet overview seminar covering electronic commerce, the Web, IP architecture, security and more.

As another sign of the times, at Network World Unplugged next month, my partner Gary Rowe and I will be doing a session called "The Great Convergence." Its theme is that messaging, groupware and electronic commerce — to name just three of the major value-bearing technologies — are coming together. They can no longer be considered separately in any benefits- or productivity-focused business reengineering plan.

Not only are serious network industry workers living through this demise of functional boundaries, they're seeing continuing acceleration in the rate of change. They used to say that if you pulled a Rip Van Winkle and went on sabbatical for three years, you would return to a completely changed industry. Today? Try one year.

Daniel Blum

Imagine you had left on vacation approximately one year ago. You would return to find the headlines filled with alien terms like "intranets," "applets" and "servlets."

And there's more to come. Even if there's a slowdown in the industry's rate of buzzword and breakthrough generation, there's plenty of work remaining in learning how to manage the Pandora's box of technologies we've already opened.

Enterprises must move beyond today's information-sharing and publishing technologies to dynamic coordination and intelligent information distribution. They must move beyond the hype of thin clients to the management of them. Key to all this will be the ability of the messaging/groupware manager to listen, learn and adapt.

We're living with future shock, but are we loving it? Maybe we ought to be. Each new, challenging project we get dragged into is a mind and resume expander that makes us yet more valuable to our employers and our customers. As long as we're honest up front, telling the employer or customer exactly what our level of competence or incompetence in the desired discipline is, we can charge confidently into the breach and usually come out victorious.

You can probably guess that I regularly listen to success tapes. To paraphrase Tom Peters, author of *Thriving on Chaos*: "If you think you have it under control, you're nuts. If it's driving you crazy, you're normal."

Blum is a principal at Rapport Communication, a consultancy that focuses on messaging, groupware and electronic commerce. He can be reached at dblum@interramp.com.

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Special Focus

DISTRIBUTED APPLICATIONS

Embedded database technology is fostering new applications

By John Cox

There was a time when a database was an application you needed training to use, either as a full-time database administrator (DBA) or as an end user with a PC.

But that is no longer necessarily the case, given that powerful relational databases are now being embedded in a range of sophisticated PC-based client/server applications, which are then distributed to hundreds or even thousands of mobile and remote end users who may not even be aware of the database's existence. This trend, which Internet and Web technologies are accelerating, opens new opportunities and challenges for MIS groups.

"This new breed of databases is the exact same database technology found on your corporate server," said Stan Dolberg, director of software strategies services at Forrester Research, Inc., a Cambridge, Mass., market research company. "Laptop or remote users can have the same data, same structures and business rules as corporate users. That means these users become a true extension of your company."

"The World-Wide Web lets you publish your information so it can be read by people with browsers. But ultimately, users want something more sophisticated on their end — some application code and data management capability to analyze and manipulate the data. A thin database, embeddable in a browser, will let you do that."

— Bo Holland, director of marketing, Pervasive Software

With relational databases, MIS groups can build into mobile and remote applications an array of data and transaction integrity features not found in the venerable Xbase PC database products. For example, database triggers and stored procedures — special programs created inside the database itself — can be set up to execute a wide range of business rules on behalf of end users.

Application users typically experience much better performance with applications designed this way because the software is processing data locally rather than dialing in to a corporate database server across a WAN or LAN. New built-in replication features can move only changed data — instead of an entire database — over the network, minimizing traffic loads and connection times, and ensuring that end users and corporate servers have up-to-date information.

For example, a change in a business rule creating a new discount formula for preferred customers can be made centrally and then replicated to laptop users, who can apply it at once when a new order is taken at a customer's site.

The Web can amplify these benefits. Icon Solutions, a client/server developer in Conshohocken, Pa., has created an object-oriented application that lets users query and update their laptop database through a Web browser (see diagram). Small graphical programs, called wizards, guide users step-by-step in building a database query. Users click on the hypertext-linked results to see more detailed data.

"Our client, a health care products company, said the time needed for training its users was reduced by over half," said Grant Challenger, Icon's director of marketing.

Vendor activity heating up

The relational PC database management systems used for such projects are compact, yet increasingly powerful. They also are now being equipped with features that let corporate database administrators copy or replicate data between central databases and single-user applications in the field or branch offices.

Database vendors are actively courting customers in this emerging market. Last December, Sybase, Inc. released Sybase SQL Anywhere Version 5.0 (formerly know as Watcom SQL) for single-user and workgroup applications. New features included electronic mail-based replication among SQL Anywhere databases, two-way replication with corporate databases via Sybase Replication Server, and new remote management features. The company also announced a new division aimed at the PC server market.

Oracle Corp. and Informix Software, Inc. also have offerings in this area, but neither company is as advanced as Sybase, Dolberg said.

Microsoft Corp.'s Microsoft Access has been widely used in such applications but is not a full relational product. Icon has worked with Access in the past but prefers SQL Anywhere because of the relational architecture and the shorter application development time.

Another player, which aims its products mainly at value-added resellers and software vendors, is Pervasive Software, Inc. (formerly Btrieve Technologies) of Austin, Texas. The company is creating what executives call "client/server in a box" — a database engine, communications protocols and utilities. Third-party vendors or software developers will be able to use this package as the foundation for their applications.

QUESTIONS TO CONSIDER WHEN DEPLOYING PC DATABASES

- Which data needs to move where and when?
- What are the trade-offs between using an E-mail-based link for data movement or some other middleware?
- Are there tools for batching local transactions, updates and queries, and then periodically submitting them to the corporate server?
- How can laptop-created transactions be connected with other corporate systems in a workflow arrangement?

SOURCE: FORRESTER RESEARCH, CAMBRIDGE, MASS.

The first step, now under way, is adapting the Pervasive database architecture, according to Ron Harris, president of the database company. "Our customers don't have DBAs and network administrators [with their applications]," he said. "The database engine has to take over these functions. We're adding features to make our databases self-maintaining."

Pervasive's *Harris says the company's focus is on self-maintaining databases.*

The next step will be creating interfaces between the Pervasive infrastructure and packaged client/server and Web-enabled applications. The company is creating a framework that will let the disparate database underlying these applications share data easily over the network. Harris expects the Web to be a key ingredient in such configurations. "The next generation of client/server applications will be based on Web browsers as the front end," he said.

In part, Pervasive will use Web-server-based Common Gateway Interface scripts to facilitate access to the databases used by third-party applications. The end user will work with browser screens to launch queries and access the results.

"The time for the embedded database concept has really come," said Bo Holland, Pervasive's director of product marketing. "People don't want to ship an application and then ship a big database that the user has to be aware of and use."

Embedded relational databases can be set up in remote single-user or remote server configurations.

A seaworthy database

Stolt Parcel Tankers, Inc. in Houston ships bulk liquids via seaborne tankers. Until recently, shipboard operations relied on inefficient paper systems and a small DOS program for managing jobs ranging from payroll to loading cargo.

Now the ships are equipped with an onboard LAN linked via satellite with the corporate network. An OS/2 server runs Sybase SQL Anywhere and data is copied back and forth periodically between headquarters and the tankers, according to Jim Shepard, Stolt's ship-owning systems manager. Data can be used locally, processed in the background on SQL Anywhere and fed back to corporate systems for the first time.

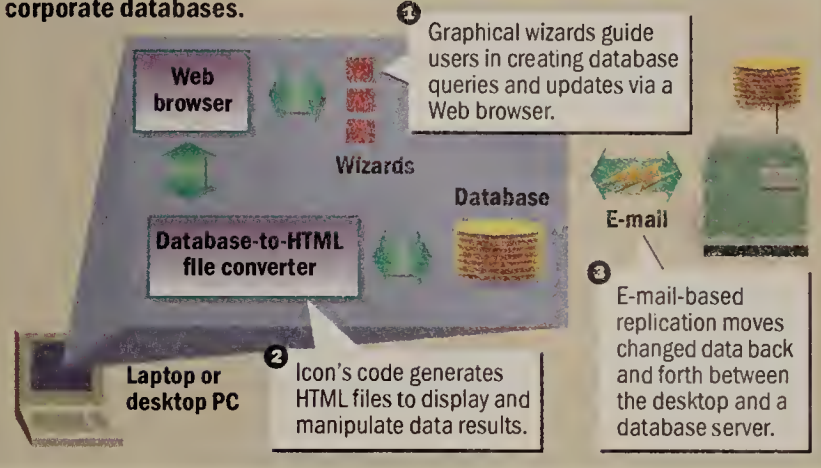
The Stolt developers created a special shell program that handles a variety of tasks to maintain data integrity and availability over the satellite links. A growing suite of applications sits on top of the database. "The shipboard users never see the database," Shepard said. "They execute a group of fairly standard Visual Basic applications."

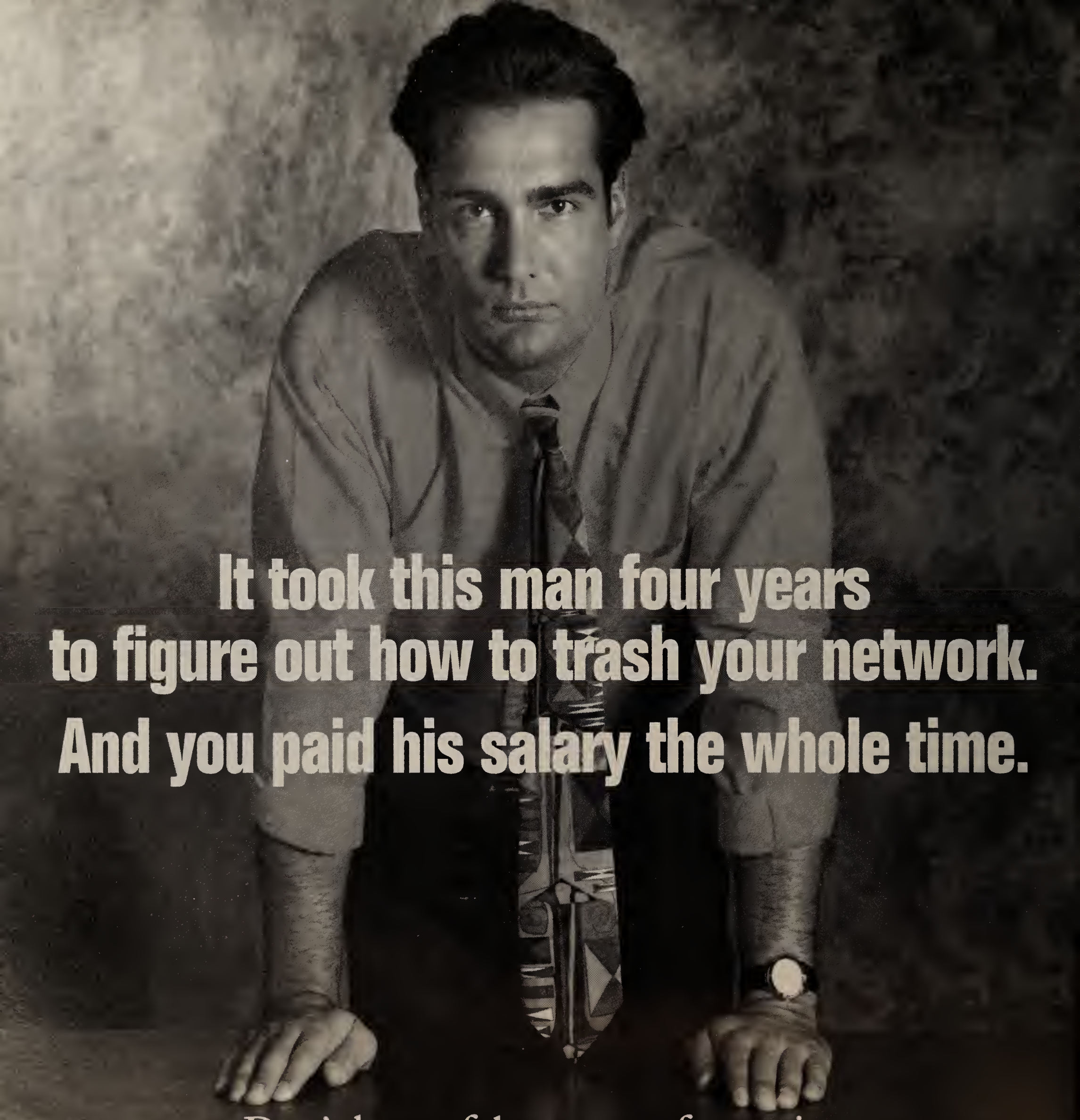
What was vital to creating an efficient, low-cost system was a relational database that would simply hum away quietly in the background, with no care or feeding required by the ship's crew.

"We needed a rugged database, with minimal administration and the ability to do replication," he said. "We couldn't afford a DBA on each ship." ■

Wrapping a database inside a Web interface

Icon Solutions has hidden a database behind a Web browser to minimize user training, lessen client code and enable E-mail-based replication with corporate databases.





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Intranets & the 'Net

Covering: Internet Technologies and Services for Collaboration and Electronic Commerce

Briefs

■ **American Express** *Travel Related Services Company, Inc. is teaming with* **Microsoft Corp.** *to develop a corporate* **online travel booking** *service that will let business travelers make reservations over the Internet or corporate intranet. The service, to debut early next year, will let companies capture travel data needed for expense management.*

■ **MasterCard International, Inc. and Visa International, Inc.** *took another step toward their Internet electronic commerce goals with the selection of* **digital-certificate** *services for their cardholders, Internet merchants and financial institutions. MasterCard is teaming with GTE Corp. to issue digital certificates, while Visa selected VeriSign, Inc. for the job.*

■ **Dartmouth College** *is selling a Macintosh-based* **intranet mapping** *and SNMP monitoring tool called InterMapper 1.0. The tool automatically detects routers connected to a network without having to enter device names and numbers, and can monitor both IP and AppleTalk devices. Intermapper 1.0 costs $795, with a 50% discount offered to educational institutions.*

Dartmouth: (603) 646-2643.

■ **LEXIS/NEXIS,** *the Dayton, Ohio-based provider of legal and business information, said this fall it will unveil a new service called Advantage* **for the Web.** *The service will let users access the LEXIS/NEXIS information services with a standard Web browser instead of the proprietary client software currently required.*

LEXIS/NEXIS: (513) 865-7466.

■ **Sequel Technology Corp.** *has begun shipping Sequel Net Access Manager 1.0, a tool for* **managing and reporting** *a company's Internet and intranet usage. The software, which runs on Windows NT Server 3.51, costs $495 for a 10-user pack.*

Sequel Technology: (800) 881-2465.

TopSpin hits CD-ROMs over Web network

By Carol Sliwa

Compact Devices, Inc. of Campbell, Calif., this week will enhance its line of TopSpin CD-ROM servers, making them better able to distribute CD-ROM data over the Internet and intranets.

The TopSpin 130, for instance, appears to the user as an independent file server, and provides Web browser access to as many as seven CD-ROM drives. The product should be straightforward: Network administrators simply plug the hardware into an Ethernet 10Base-T port.

Top Spin *puts Web face on CD-ROM.*

After it is hooked up, they can manage the TopSpin server using a Web browser. TopSpin 130 sells for $495 and has a sustained throughput of 2M bit/sec. The TopSpin 150, which doubles the performance level, costs $795.

The speed that users will experience, however, is dictated by bandwidth. Access over an intranet could be snappy if the LAN is high-speed. Getting at the CD via the Internet could be another story, and will vary depending upon modem and line speeds.

Although TopSpin has no CPU or RAM, it appears to work as a fully independent NetWare Network File System and Windows NT Server, allowing users in those environments to access CD-ROMs with their standard network clients.

There is also a TopSpin 120 version, selling for $395, that lets users access CD-ROMs in a NetWare-only environment.

✆Compact: (800) 894-0519.

Vendors tighten Web defenses

By Ellen Messmer

Worried a hacker is tampering with your Web site or that hostile Java applets from the 'Net might be attacking your corporate computers?

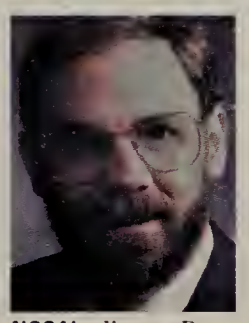
NetworkWorld Fusion

Download papers on Java security from Network World Fusion (http://www.nwfusion.com). Select News+.

So are a lot of people these days, and vendors are responding to this wave of fear, uncertainty and doubt with an arsenal of new software defense tools.

Haystack Labs, Inc. recently released the Unix-based WebStalker, which monitors a Web server and TCP/IP applications. The software notifies a manager of suspicious activity, such as attempts to override buffers to gain root privileges or make an unauthorized outbound connection from the server.

WebStalker software is limited to monitoring activity on Netscape Communications Corp. servers as well as Web freeware from CERN, Apache Group and the National Computer Supercomputer Center.



NCSA's *director Peter Tippett.*

The $4,995 Webdefense software automatically shuts down unauthorized processes, and notifies the site's Webmaster of the attempted security breach by visual or audio alarms, or electronic mail.

The SNMP-compliant WebStalker works by tapping into the operating system audit trail and matching the activity against expected patterns, said Steve Smaha, president of Haystack Labs.

According to Smaha, the Austin, Texas-based firm got into the security business in 1989 by supplying mainframe audit software to the Department of Defense and "paranoid intelligence agencies."

Java gone crazy

If you feel paranoid about the prospect of Java applets running amok in the computers of unwary users, a new product from Finjan Software, Ltd. lets users digitally nuke any hostile code.

Finjan is the Bedouin word for a coffeepot that is widely used in the Middle East, and the start-up, based in Netanya, Israel, intends to specialize in Java security products.

The company's first product is SurfinBoard, a Java applet that works with the Java Security Manager running on Windows 95, NT or Solaris. SurfinBoard displays the activities of Java applets running on a local machine. It warns the user via audio and visual alarms when applets start to behave destructively, hog memory resources or deny service. SurfinBoard then restricts the activity or "allows you to kill the applet through a hot button," said Schlomo Touboul, president and founder of Finjan. "SurfinBoard is a kind of antivirus tool for Java."

Web security is such a hot topic that the Carlisle, Pa.-based National Computer Security Association (NCSA) has started a program to have its experts inspect Web sites to certify they meet basic levels of security.

NCSA will check to see if Web sites have firewall protection, Web auditing and protection for sensitive data, as well as personnel maintaining it that are trained in Common Gateway Interface scripting guidelines as well as Java and other client executable code.

"If they pass the tests, they can put the NSCA logo on it," said NCSA director Peter Tippet.

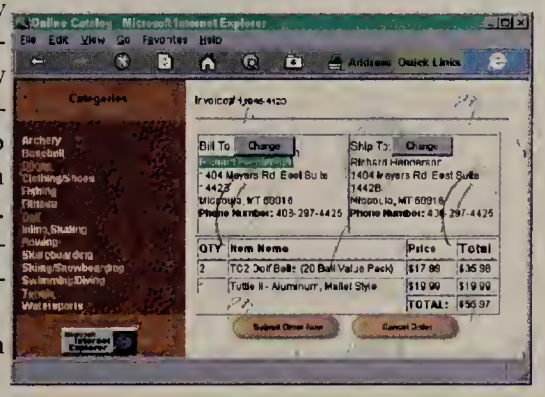
✆NCSA: (717) 258-1816; Aaystock: (512) 918-3555; Finjan: 972-9-659-440.

Attachmate glues data to Web

By Carol Sliwa

Attachmate Corp. this week will announce the second version of its Emissary Host Publishing System, a software package for helping users get at legacy data through Web browsers.

With Version 2.0, users get on-the-fly HTML by using Emissary HostSurfer. The software now converts their mainframe terminal session to an HTML session as soon as the request comes in. No reengineering or creation of an all new application is needed.



Attachmate *lets users browse for legacy data.*

Other new features in Version 2.0 include:

■ An application preload facility that speeds access to VisualBasic applications.

■ Support for the Netscape API, which will improve performance of the product with Netscape Communications Corp. servers. The product previously had supported only Common Gateway Interface and ISAPI — Microsoft Corp.'s version.

■ The Emissary Host Publishing System allows users to Web-deploy applications created with VisualBasic and Attachmate's QuickApp and QuickDB development tools.

■ Support for a range of hosts, including TN5250, TN3270, DB2, DB2/400 and SQL/DS.

The product will cost $25,000 per server for as many as 25 users. It will be available Aug. 30.

A free test version that supports five concurrent users can be downloaded at www.attachmate.com.

✆Attachmate: (800) 426-6283.

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Technology Update

Keeping Up with Network Technologies and Standards

NETWORK HELP DESK

Network World tracks down answers to your questions. Please submit them to Chris Nerney via phone at (800) 622-1108, Ext. 451, the Internet at cnerney@nww.com or fax at (508) 820-1103.

Our main Unix disk drives are mounted to a NetWare 3.12 server running Network File System (NFS). We would like to mount our secondary drives but do not have enough memory. For the secondary drives, we only care about the ability to ac-cess, not the access time. So can we mount Unix drives without NetWare caching them and using memory?

Robert Dahm, Excalibur Technologies

NetWare NFS has to cache the drives so it can build a table that will allow it to present the information on the drive to the NetWare clients in a form they can understand, says Ron Nutter, a Master Certified Novell Engineer and Groupware CNE in the Lexington, Ky., area. To help minimize the time required to mount a drive, you can add memory to the server running NetWare NFS, Nutter suggests.

You also can add a 100M bit/sec Ethernet card in the server and in the Unix machine from which you are mounting the drives. This would help reduce the time required to mount a volume, Nutter says.

If going to 100M bit/sec Ethernet is not an option, try putting an additional network card in the server and directly connecting to a card in the Unix machine. If those two devices are the only things on the cable, mounting time should be reduced since you will be eliminating the network traffic that also has to be on that cable, Nutter explains.

Be helpful

While you're in the Help Desk conference on Network World Fusion, come to the aid of your peers. In Topic 65, an administrator is using Psc Support in Microsoft Corp.'s Windows program to connect to an IBM Application System/400 minicomputer. He gets a message that reads "DOS 16m.386 virtual device driver not loaded."

The administrator needs to know where in the system.ini file to place the line needed to fix this problem. He says he has tried every possible configuration he can think of without luck.

Cable plant upgrades mean support for interactive, multimedia services

All-coaxial systems to be replaced by hybrid fiber-coax infrastructure for ATM services.

By Samuel Alunni

Within the next five years, you can expect to see many multiple service operators (MSO) — formerly known as cable television companies — revamp their infrastructures so they can deliver a range of multimedia, interactive services to at-home workers and other residential clients.

Many MSOs have publicly committed to replacing their entire cable plant with hybrid fiber-coax (HFC) networks, an evolutionary improvement over the traditional tree-and-branch systems used in most cable television systems. HFC systems use fiber-optic cabling links that extend from the head-end of the cable system to a fiber node located in each neighborhood of the service area. Typically, as many as 500 customer sites can be serviced by a fiber node.

In HFC systems, the use of coaxial cable is limited to the segment between the fiber node and the customer's premises. Since a wide range of frequencies can be transmitted over fiber-optic cabling, HFC systems have more bandwidth available for transmission than traditional all-coaxial cable systems.

The signal in HFC systems is sent from the head-end controller in optical form. At the neighborhood fiber node, the signal is converted from optical to electrical and is distributed to the many coaxial cable drops leading into customer premises.

The use of high-quality laser components in the fiber segment ensures low bit error rates. Due to low attenuation on the fiber link, they also ensure that the most distant fiber nodes in the systems can be reached with a limited amount of power. As a result, fewer amplifiers are needed overall and the number of amplifiers in cascade between the head-end and the fiber node is reduced. This is more economical, and it improves the quality of service by lowering the likelihood of failure.

High approval rating

HFC is endorsed by a majority of MSOs because of its ability to support interactive services and higher bandwidth and better service quality than coaxial cable. It also reduces maintenance and operating expenses. Deployment of Asynchronous Transfer Mode is critical to the MSOs' plans to deliver integrated multimedia services.

MSOs see several advantages in the selection of ATM as the data link layer protocol data unit. The nature of ATM ensures that new multimedia services can be added over time without requiring modifications to the basic ATM protocol. ATM also provides an integrated multiplexing platform capable of supporting a mix of guaranteed traffic flows.

Two standards groups are now addressing the engineering challenges associated with delivering ATM over HFC.

The ATM Forum's Residential Broadband (RBB) working group is focused on the problems associated with delivering ATM over residential broadband distribution systems. The RBB group relies on the efforts of the IEEE P802.14 Cable TV MAC and PHY working group to address the challenges associated with the transport of ATM cells over an HFC network.

A standard foundation

Current efforts in the ATM Forum are focused on delivering a full-function User-Network Interface (UNI) to the home via an ATM Interface Unit (AIU). AIUs in the system will be controlled from the cable system head-end by an ATM digital terminal unit. The AIU provides the home with an ATM UNI.

This home UNI (HUNI), meant to be as standard as possible, will provide a subset of the ATM Forum's UNI 3.1 or UNI 4.0 specifications. But why would anyone need ATM in a residential setting? The prime example, especially for business users, is the delivery of Internet services.

At the Internet subscriber's premises, an ATM cable modem furnishes a network connection based on an Ethernet 10Base-T twisted-pair interface. The Internet services are delivered to the residence via IP over Ethernet. The cable modem can function as a bridging device and simply forward Ethernet frames over ATM, or it may perform like an IP router and transmit IP datagrams over ATM. Both techniques are supported by the ATM-based services model.

MSOs are attracted to ATM's ability to support a range of interactive services. In addition to providing Internet services, for example, an MSO would be able to offer telephony from the same cable modem. An ATM cable modem can provide multiple service interfaces — an Ethernet port for a computing device and an RJ-11 jack for a telephone, for example — from the same box. ATM enables MSOs to offer new interactive services without the crushing expense of regularly replacing installed premises equipment.

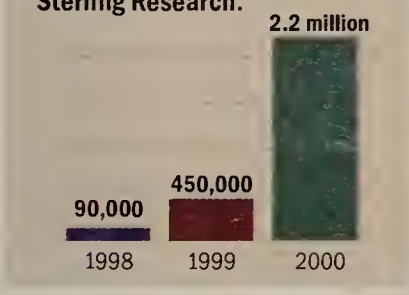
MSO need for ATM over HFC explains many of the cross-fertilization alliances occurring in the industry. Data networking leader 3Com Corp., for example, recently took an equity position in Com21, a leading innovator in cable technologies.

3Com is licensing Com21's cable modem technology. It will use its cable head-end controller equipment. Both companies will apply their ATM expertise to the development of next-generation cable technologies that will be based on open standards.

Alunni is a principal at Sterling Research, Inc., a consultancy in Sterling, Mass., that conducts primary market research and customer satisfaction studies for networking companies. He can be reached by phone at (508) 422-8032 or via the Internet at alunni@ma.ultranet.com.

Cable modems are coming

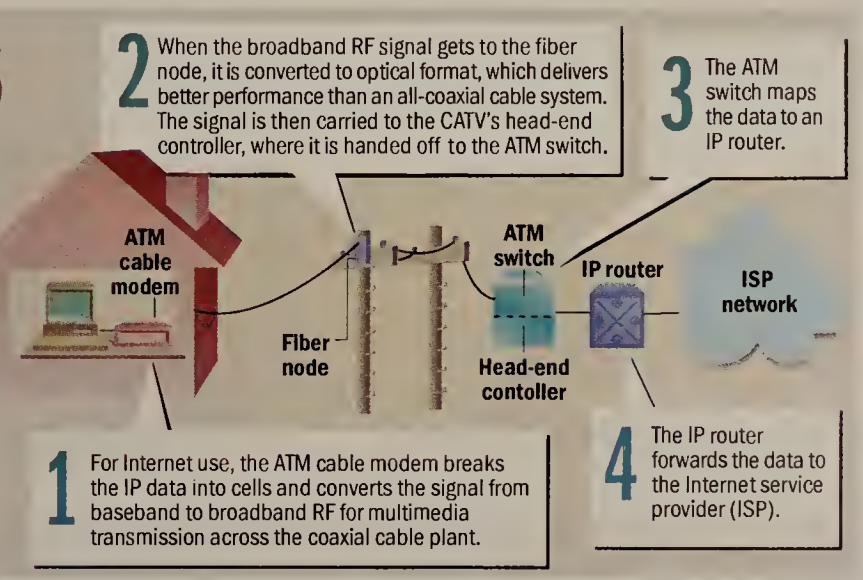
The number of modems that will be used for sending ATM over HFC cable will reach into the millions by the year 2000, according to Sterling Research.



HOW IT WORKS

Bringing the Internet home

By running ATM over emerging hybrid fiber-coax systems, cable TV companies plan to deliver interactive, multimedia applications, such as Internet services, to the small office/home office market. While the coaxial system handles the physical layer, the ATM protocol handles the data link layer.



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EDITORIAL INSIGHTS

An odd view of competition

Three weeks ago, *Network World* Senior Editor Joanie Wexler and I were having a pleasant lunch with AT&T executives at their New Jersey headquarters when we asked about the pricing of network services.

Well, you could have sliced the air with a machete. At the time, we attributed the tension to AT&T's usual defensiveness about its repeated price hikes over the last few years. What we didn't know — and what they didn't volunteer — was that the previous day AT&T had raised its key business-services prices 4% to 5%.

The story gets better. That very day, it turns out, MCI officials were rushing to match AT&T's price increase on virtual private network and 800 services (July 29, page 1).

For two companies with pretensions to leadership in the networked computing era, this is mighty odd behavior. Does anyone recall that network hardware and software arrived in practically every U.S. business office because vendors kept *raising* their prices?

AT&T says increasing competition in the long-distance industry forces it to spend more money on sales and advertising, thus pushing up prices. This will certainly come as news to the economists.

The carriers also chant that users have a choice of 500 long-distance carriers. But the vast majority of these "carriers" are really resellers. And among the AT&T offerings that suffered price hikes is Distributed Network Services, the prime vehicle for resellers to buy AT&T capacity.

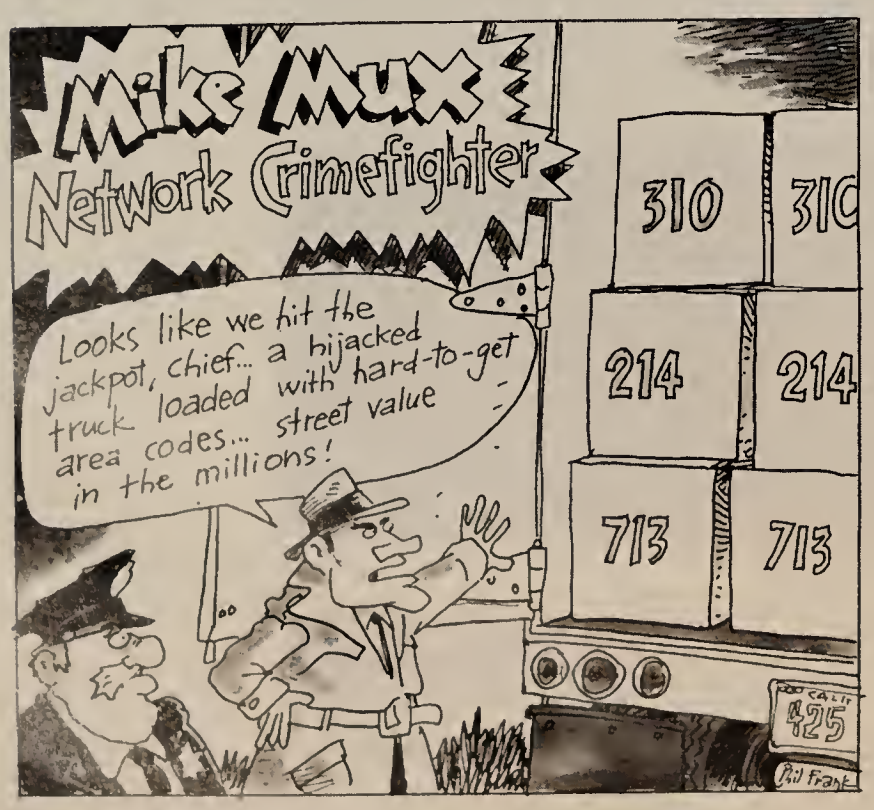
No, the Big Three long-distance carriers raise prices in tandem because they can get away with it. The only thing that will stop this practice is the emergence of new long-distance companies with real networks in the ground — that means the regional Bell operating companies. In the one situation in which the Big Three and RBOCs have butted heads — the intra-LATA toll wars in California, Illinois and other states — prices have gone way down (with plenty of money spent on advertising).

Since they're toying with users' budgets, the long-distance carriers ought to drop the conceit that the local exchange is a monopoly-driven cesspool of inefficiency while their own market is a golden citadel of competition. Both the local and long-distance markets need help, quickly. Let's hope the FCC acts just as forcefully in the long-distance arena as it did last week in establishing new rules for local competition.

David Rohde, senior Washington correspondent drohde@nww.com

Teletoons

By Phil Frank and Joe Troise
baba@sfgate.com



REALITY CHECK

For Xylan deal to succeed, IBM must learn to sell to the broad market

On July 22, IBM and Xylan Corp. announced a sweeping agreement that, while not a merger, is a lot more serious than a marketing or OEM relationship. With this announcement, the two firms launched a serious assault on vendors such as Cisco Systems, Inc. and concepts such as IP switching.

Thomas Nolle

According to the agreement, IBM will buy $30 million worth of Xylan switches in the next eight months — a kind of stocking order to allow Big Blue to deliver Xylan's solution set to IBM users quickly. IBM also has manufacturing rights, with a royalty to Xylan, for the entire Xylan line. Finally, IBM gets stock warrants to buy up to 5% of Xylan if the results of the deal look favorable. The more interesting aspect of the deal, however, is the positioning of the combined product sets of IBM and Xylan. The vendors claim to have the most complete solution to multiprotocol switching available in the marketplace in the combination of Xylan's virtual LANs and IBM's Switched Virtual Networking (SVN) architecture. It's pretty clear that each company sees the other's product set as filling a gap in its own positioning. The question is whether filling these gaps will fill any meaningful gaps for users.

It might be tempting to classify this deal as an example of "the enemy of my enemy is my friend" psychology. But IBM and Xylan could have dealt with simple competitive issues with a simple marketing relationship.

IBM's low-end LAN switches were the fruit of its relationship with Kalpana, Inc., which became awkward when Cisco bought Kalpana. SVN, IBM's switching architecture, must be able to extend outward to the desktop. IBM, after all, is championing 25M bit/sec ATM as the future desktop strategy of choice. Building on a Cisco-based approach for desktop networking is a nonstarter for a company that expects to be fighting Cisco in nearly every strategic account.

Xylan also has been fighting Cisco. Except in collapsed-backbone missions, switches and routers can be peaceful companions rather than competitors. Not so to Cisco, which apparently views switches as belonging to that ugly class of products called "not-routers." As a result, Xylan often finds itself involved in head-to-head competition with Cisco, particularly in large companies where Cisco jealously guards its account control.

It might be tempting to classify this deal as an example of "the enemy of my enemy is my friend" psychology. But IBM and Xylan could have dealt with simple competitive issues with a simple marketing relationship. Both firms describe this as "almost a merger." Why did they go so far?

It seems clear that R&D investment is a large part of the reason. IBM and Xylan both expect to sink major resources into joint development. Each is establishing an R&D presence in the other's headquarters. The stated objective of this activity is to create a switch-based architecture for internetworking that is as fully flexible as today's routing but a lot faster.

Making connections at the media access control (MAC) layer (Level 2) is faster than making connections at the network layer (Level 3). IBM and Xylan want to switch at the MAC layer on the premises, where bandwidth is cheap and multicast firewalling isn't an issue. In the wide area, where bandwidth is more expensive, they plan to implement Level 3 switching to contain multicasting. This divides multilayer switching along current product boundaries for the two companies and also generally follows the ATM Forum's approach — LAN Emulation for the workgroup and Multiprotocol over ATM for the wide area.

One immediate impact of the new relationship will be to focus attention on some of the limitations of current LAN-to-ATM approaches. Most of these approaches are focused exclusively on IP — IP switching is the obvious example — and yet most corporations realize that virtually none of their desktops are exclusively IP consumers. Whatever you believe about the future of IP vs. other protocols, it's going to be tough to get money for a network that won't switch the kind of traffic that's present at the time of installation. IBM's SVN is inherently multiprotocol in nature, though IBM's success in promoting its benefits in that area have been far short of successful.

Another impact of the deal is the questions it raises on the future of IBM's current product set. Xylan's switches overlap every current IBM product up to the 8260 hub, though price/feature trade-offs are slightly different. Since obsoleting your users' current infrastructure isn't a good way to win loyalty, the 8260, which is the traffic concentrator de jure of the current IBM product line, must retain that mission in the new Xylan-based switch family. IBM's Message Switching Services can expect to remain an 8260-hosted capability, with the Xylan switches drawing on MSS services rather than providing them. The 8260 then becomes the technical integrator of the new Xylan-based approach to workgroup computing and the current IBM approach.

If IBM has one conspicuous weakness, it is an inability to make its strategic concepts exciting to the mass market. All too often, IBM's announcements just provide a foil for its competitors to play against in the trade press. IBM is then forced to seek success one sales call at a time, relying on its influence with large accounts.

Will users buy Xylan switches from IBM just because IBM paints them blue and sells them through its sales force? Don't count on it. Xylan's products are targeted at the broad market, the market that only marketing can reach. The new relationship can be successful only if IBM can somehow rectify its positioning problems.

Nolle is president of CIMI Corp., a technology assessment firm located in Voorhees, N.J. He can be reached at (609) 753-0004 or via the Internet at tnolle@ix.netcom.com.

USER VIEW

Microsoft marketing glosses over NT security issue

By Ben Rothke

OK, security maven, it's time for a pop quiz. You purchase Microsoft Corp.'s Windows NT Server and Workstation Version 3.51, which Microsoft claims is C2-evaluated. After the server and workstation are installed and tested, and after the cabling guys have gone home, can you rest assured that you have a nice, secure NT network?

While Microsoft would have you believe the answer is yes, by Microsoft's own admission (and according to the C2 specification), it is 100% impossible to make a C2-compliant Windows NT network out of the box.

If you doubt me, I suggest that you purchase the Windows NT 3.51 resource kit, which includes a CD-ROM with a C2 Security Configuration (c2config.exe) utility. This program checks your system to verify and ensure C2 compliance. One of the security features it checks is networking. Should Windows NT detect that you are connected to a network during the C2 test, you will get the following error message: "C2 compliance requires that no networking software be installed on your system. One or more network services have been detected on your system. Select OK to use the Network Control Panel Applet to remove these services."

If you click on Help, you will get the following bit of information: "Windows NT networking services were not included in the NCSC C2-evaluated configuration. For your system to conform to the evaluated C2 configuration, the network services must be removed or disabled."

And should you select OK to remove the network services, if you are on a Windows NT workstation, you will disconnect yourself from the network. If you run the test on a server, you will shut down your network.

At this point, you probably feel like the guy in the movie *Mo' Money* who buys a TV that turns out to be a box of bricks.

You may wave a Microsoft press release in your hand that has a lot of stuff about Windows NT and C2 in it. But if you read it more closely, you will notice that it never says Windows NT is secure as a complete network operating system. Windows NT is secure only as a stand-alone box.

If you read even more closely, you will notice the comment: "Microsoft intends to add different platforms, as well as processors, to the evaluated configuration. Networking components of Windows NT Workstation and Windows NT Server 3.51 are currently in RAMP [rating maintenance phase]. C2 evaluation is expected shortly."

Microsoft is telling you that you can't make a C2-compliant Windows NT network. But did you catch that in your first read of the press release? Try reading it again — this time, between the lines.

Also, the phrase "C2 evaluation is expected shortly" is meaningless. Getting products C2 certified takes years. Even though NT is years into the process, the final stages to complete certification are not just around the corner.

Don't believe the hype about how secure Windows NT is. Computer security is very complex. It's absurd to think you can take NT out of the box and make a secure network using it. It's not bulletproof.

So what does this all mean? First of all, don't believe the hype about how secure Windows NT is. Computer security is complex, and it's absurd to think you can just take Windows NT out of the box and make a secure network using it. Windows NT is a good operating system with nice security, but bulletproof it ain't.

If you're interested in viewing the C2 specification, you can download the document "Department of Defense Trusted Computer System Evaluation Criteria" from http://csrc.ncsl.nist.gov/secpubs/ std001.txt. By the time you hit Page 30, your head should be spinning.

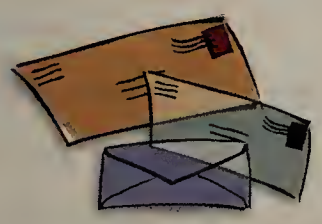
Should you then decide you want to make your Windows NT network C2 compliant, what do you have to do?

Get out your checkbook. For a 100-user network, expect to pay at least another $20,000 for the third-party software needed to make it compliant.

Microsoft isn't the only company to make such grand claims. But don't let Microsoft or any other company sell you a solution that doesn't work. You may get a lot of nice, glossy marketing material in the mail, you may even get a cool T-shirt at the computer show, but don't let the gloss and the freebies blind you to the cold, hard facts.

Rothke is a New York-based network engineer and security administrator for a major financial organization. He can be reached on the Internet at 74710.3325@compuserve.com.

MESSAGE QUEUE



Unfounded claims

In his letter to the editor, Christopher Waters claims that Esther Schindler's review of OS/2 Warp Server is of questionable validity because she is known to be an OS/2 advocate (July 1, page 37).

While I agree that reviews should ideally be written by disinterested third parties, this rarely works out in practice. For non-mainstream products, advocates are often the only people with accurate information.

Schindler has shown herself to be a journalist with integrity who does not support products without valid evidence. In the past, she has been quick to chastise the more rabid OS/2 advocates who have become blinded by their emotions. Her review did support Warp Server, but in a balanced, informative way.

I applaud *Network World* for allowing her opinion to be heard. If Mr. Waters disagrees with the article's conclusions, I suggest that he provide counterarguments rather than portray the author as some kind of radical.

Derek Suzuki
Special projects manager
City of New York Parks & Recreation
New York

Wake up, InterNIC

Regarding Dave Buerger's column "Internet domain registration needs refinement, not excuses" (July 1, 1995, page 54):

My company paid a local Internet service provider (ISP) to register our domain name last July. This was before the Internet Network Information Center (InterNIC) started charging for registration, so the fee was kept by the ISP. Now, a year later, we still haven't received any correspondence (invoice or otherwise) from InterNIC.

I've read about companies losing their domain names due to nonpayment of the registration fee, so I called InterNIC to find out what's going on. The person with whom I spoke asked me for my invoice number. After I explained (again) that I had never received an invoice, he said he couldn't even look up the status of the account since I didn't have an invoice number.

I asked if he could issue me a new invoice. He replied, "We'll send you an invoice eventually; just don't worry about it until you get it."

Is InterNIC so inept that they don't keep records of who they sent invoices to, as well as the invoice number? Are they so incompetent that it takes longer than a year to get an invoice out to a registrant?

I'm with Buerger; I've got enough to do without having to worry about the possibility of losing my domain name.

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Buyer's Guide

A server health plan

Here's the help you'll need to find the package that will keep your NetWare or Windows NT servers in tip-top shape.

By Edwin Mier

Few events in the life of a network manager are as stimulating as when a server goes down. That's when dozens of users you've never heard from before all call at once, ostensibly to express their view about your job performance.

For some of you, the best preparation for a server outage is prayer — and making sure your resume is up to date. But there are tools, such as the server management applications profiled in this Buyer's Guide, that can prove handy, perhaps in addition to prayer.

However, sorting through the literally hundreds of management applications available today to find the ones that can specifically check up on the relative health of your servers is a daunting task. Complicating matters is the fact that many vendors' management wares come packaged in a suite of applications. Such a suite may have only one component — if any — that addresses server management.

A further complication is the general industry trend to classify management software into network and systems management categories. But that doesn't help either because effective monitoring and management of servers needs to address elements of both environments. So what are you to do?

A good start is to mimic what we did in preparing this Buyer's Guide. We distributed a questionnaire to nearly 100 management application vendors, asking them to respond only with products for managing Novell, Inc. NetWare and/or Microsoft Corp. Windows NT Server environments, two of the most popular network operating systems. As it turns out, a large percentage of vendors either didn't offer applications specifically for managing these servers, or else did not respond.

After sifting through the replies we did get, we ended up with the 14 solid, server management applications listed in the chart on page 43.

ILLUSTRATION BY DEREK MUELLER

We found that while the applications have some common features to perform routine checkups — all of them, for example, can show you the current level of the server's CPU utilization — only a handful claim to deliver server capacity planning. That's where the application tracks server activity over a longer term, spots trends and potential problems, and offers advice about what you can do about it.

It's either-or

Only two of the applications that we turned up — Avanti Technology, Inc.'s NConsole for Windows 3.0 and Intrak, Inc.'s ServerTrak for Windows and ServerTrak for System Fault Tolerance (SFT) 3.0 — handle NetWare servers but not Windows NT.

Similarly, four packages — BMC Software's Patrol Application Management 3.1, Metrix S.A.'s WinWatch Desktop Management Solution 2.0, Microsoft Corp.'s Systems Management Server (SMS) 1.2 and Power Center Software LLC's Power Center for Windows NT 2.0 — address Windows NT servers but not NetWare.

The remaining vendors all claim to manage servers running both of these Intel-based network operating systems. Even Novell says its ManageWise package — oriented toward NetWare server, client and network management — can manage Windows NT servers. However, to achieve this support, you'll need an optional module that costs $595 per NT server.

A logical first step in shopping for a product is understanding the pieces that are needed to do the job.

Except for Microsoft's SMS and Power Center's Power Center for Windows NT, all the applications come with a module that must be loaded and run on each managed server. This module usually takes the form of a NetWare Loadable Module (NLM) on NetWare servers and a Dynamic Link Library (DLL) module for the 32-bit Windows NT Server.

These modules will chew up some amount of server resources, which means performance will be affected to some degree. An exception is Seagate Enterprise Management Software's WinInstall 5.1 package, in which the server software component is optional. Still, to obtain all the features and functions shown in the chart for Seagate's application, the server software module is necessary.

Splitting the load

Then there's the piece of software that runs on the management station to provide the user interface to managed servers. The chart shows the management station platforms that each product supports.

One area where the packages can differ appreciably is in how much processing is done on the server vs. the amount that's done on the management station platform.

Some vendors, such as BMC Software, refer to their management station application as console software. In many cases, a console is simply the user interface, which implies that much of the processing associated with server management, including data storage, is being done elsewhere.

In some cases, this processing is done on the managed servers, and this can amount to a considerable additional load. In others, the bulk of the processing, including database storage, is done on the stand-alone management station.

So, be sure to find out how much of a package's processing is done on the managed servers and how much is done on the management station. If you want to avoid adding much more processing onto the server, be sure that the server component — often

Readers' views on NetWare and Windows NT Server management software

Based on 100 interviews

How did/will you buy management software?

77% Integrated suite

"Why spend the time to find all the pieces when you can get them all at once?"

"You have just one vendor to deal with."

"We could build a single database and share information."

"Integration gives us the opportunity to do more in terms of automation."

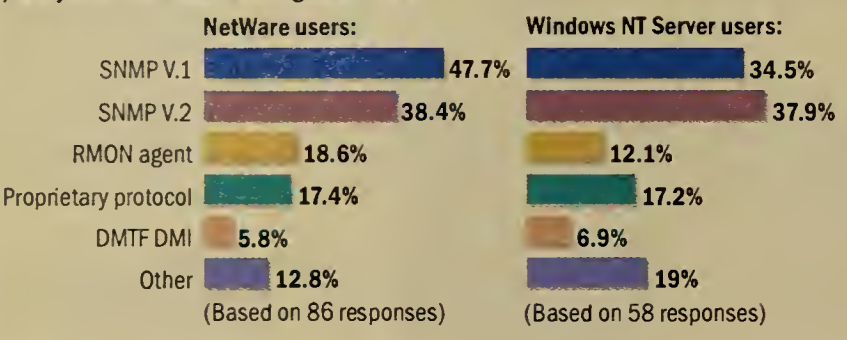
11% A collection of individual utilities

"One company doesn't have everything we're looking for."

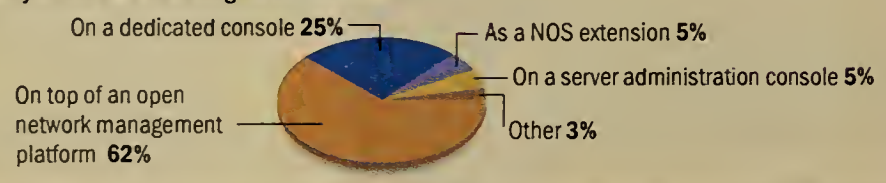
"You don't need everything that comes in a suite, so I like to pick and choose."

"We acquire things as the need arises."

What do/will you use to collect management data?



Where do/will you run server management software?



On top of an open network management platform

"You can consolidate different packages from different vendors."

"It allows you to go with the best-of-breed applications."

"It can also manage hubs and other network equipment."

On a dedicated console

"You can segment out the functions."

"The application performs better."

"There is no interference with the network operating system if there is a problem."

As a NOS extension

"It allows us to do many things from our desktops."

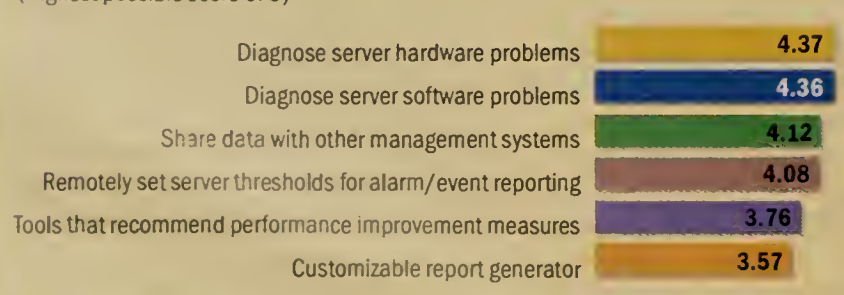
"It has a reasonable cost."

On a server administration console

"It's easier to implement."

"It's easier to access from home."

How important are these features in selecting NetWare or Windows NT server management software?
(Highest possible score of 5)



The survey was conducted by Focus Data, an independent market research firm in Framingham, Mass., that gathers primary data concerning the enterprise network environments and needs of end users. To purchase full survey results, call Mona Dabbon at (508) 626-2556 or send E-mail to mdabbon@focusdata.ultranet.com.

referred to as a client or agent — is minimal and that most of the work, including management data storage, is done on the management station.

We also asked vendors whether the management station used for their applications had to be dedicated to this function. The answers varied, usually depending on the number and range of servers being managed. The majority of vendors, though, strongly recommended a dedicated management station.

The reason is that the application can, and usually does, manage a lot more than just Windows NT and/or NetWare servers. Equipped with the right additional components, BMC Software's Patrol Application Management can also manage various Unix-based and other server platforms, including OS/2. However, the product cannot handle NetWare servers. Power Center 's product can concurrently manage Unix servers, as well as various IBM server systems.

How the management station software communicates with managed servers is another aspect that can be of concern.

For example, if you're already using Simple Network Management Protocol-based software, this usually means that the necessary network connectivity — such as IP routing — is already in place. Thus, a server-management application based on SNMP should be fairly easy to integrate into your existing management environment.

However, if the network is primarily based on another protocol such as Novell's IPX, you face a challenge in implementing certain server management applications. Bull HN Information Systems, Inc.'s ISM Workgroup Monitor package, for example, is based mainly on SNMP and IP. At a minimum, the NetWare servers would have to be able to send SNMP over IP. Furthermore, IP routing would be needed on all links connecting the management station to the managed servers.

Note, too, that a number of vendors use a proprietary management protocol. Avanti, Intrak and Seagate are examples. There's nothing inherently insidious about proprietary management protocols, provided they run over a transport protocol supported by your network.

But it may be useful in some cases if a standard management protocol, such as SNMP, is supported by the server-management application. Why? If the managed server delivers management data via SNMP, then users have more flexibility in tying server management in with their other network and systems management operations.

For example, Windows NT or NetWare servers set up to issue SNMP trap messages can send these not only to the designated server management station — if it's SNMP-based — but also to any other

NetworkWorld Short LIST

NetWare and Windows NT server management software

The Short List highlights products Network World *recommends you examine when shopping for NetWare and Windows NT server management software. The products cited here were selected as leading contenders in four general areas: server hardware/platform management; primarily Windows NT server management; primarily NetWare server management; and concurrent management of Windows NT and NetWare servers. Be aware that there are other viable contenders in each area that may better suit your needs.*

Compaq Computer Corp. has achieved a marketing coup with its **Insight Manager 3.0,** which is now shipping. The easy-to-use, graphical application focuses mainly on performance and operational aspects of the hardware platforms that run Windows NT Server or NetWare. However, the product's capabilities for managing the Novell or Microsoft server software are fairly limited. The management software is bundled with, and works only with, Compaq's servers.

Microsoft Corp.'s Systems Management Server 1.2 (SMS), one component of the vendor's BackOffice application suite, is among the most feature-rich offerings for managing Windows NT Server software. It's more than reasonable to assume that nobody knows the inner workings of Windows NT like Microsoft. For example, while most vendors' NT Server management application requires a separate agent module to be run on each managed server, SMS does not. Also, SMS is already able to fully manage the latest version of Windows NT, Version 4.

Just as Microsoft owns the Windows NT software environment, **Novell, Inc.** owns NetWare server software. With **ManageWise 2.1,** which actually comprises a suite of modules and components, Novell provides among the most detailed views of the NetWare server environment. Novell now also offers an optional add-on module that extends ManageWise monitoring to include Windows NT Server at the cost of $595 per NT Server.

On the category of concurrent, consolidated management of both Windows NT Server and NetWare, users should look at **Symantec Corp.'s** suite. The vendor's **Expose 3.5** is a feature-rich package, which, with agent software components running on managed NetWare or Windows NT Servers, provides a broad view of both hardware/platform and software operations and performance.

NetWare and Windows NT server management software

Vendor	Product	Type		Operating platform/ Network protocol	Key server management features																			Special features	Price
		NetWare manager	Windows NT manager		Number of users logged in	List of logged-in users	Server CPU utilization	Server memory utilization	List of applications running	Traffic to and from the server	Server disk utilization	CPU use by application	Memory use by application	Disk content by directory	Server security management	Server software diagnostics	Server hardware diagnostics	Capacity planning	Alarm/event threshold setting	Special notification actions	Server topology map	Report generation	Custom-defined reports	Printing of screen displays	Dataexport in various formats		
Avanti Technology, Inc. (512) 335-1168	NConsole for Windows 3.0	✔		Windows 3.X or 95/proprietary over NCP; SNMP optional	✔	(1)	✔	✔	✔	✔	✔		✔					✔	✔	✔		✔		✔	✔	Reporting and management of NetWare SET parameters; remote editing of server configuration files	$295 per server; $100 per server for optional SNMP agent
BMC Software, Inc. (800) 841-2031	Patrol Application Management 3.1		✔	Intel and Sun Sparc workstations/SNMP and IP		✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	(2)	(2)	(2)	✔	✔	✔	✔		✔		Options available to monitor Unix, OS/2 and other server platforms; limited SNMP support (no gets or sets)	$3,500 for console; $550-$1,400 for base software; $1,500-$7,000 for application monitoring
Boole & Babbage, Inc. (408) 526-3000	Ensign R3 3.06	✔	✔	Various Unix/RPC and IP	✔	✔	✔	✔	✔	✔	✔	✔	✔						✔	✔	✔	✔	✔	✔	✔	Can integrate with leading management applications	$6,000 for console; $500 per agent
Bull HN Information Systems, Inc. (508) 294-6000	ISM Workgroup Monitor 2.0	✔	✔	Various Unix/SNMP over IP	✔	✔	✔	✔	✔	✔				✔	✔			✔	✔		✔	✔	✔	✔		NT event logging via SNMP traps; performance metrics for tuning NT Server; software distribution; asset management	$2,375 per server; $11,250 for core software
Candle Corp. (310) 829-5800	Omegamon Monitoring Agent	✔	✔	Windows NT, OS/2 Warp, Unix/RPC and proprietary over IP	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔					✔	✔		✔			✔	Remote access to console of any managed server to take corrective action; access to server log files	$500 per server; from $10,000 for base software
Compaq Computer Corp. (713) 370-0670	**Insight Manager 3.0**	✔	✔	**Windows NT/SNMP over IP, IPX or PPP**			✔			✔	✔						✔		✔	✔		✔				**Software version control; optional board for remote access to server**	**Bundled with Compaq servers; upgrades and maintenance extra**
Intel Corp. (800) 538-3373	LANDesk Server Manager Pro 2	✔	✔	Windows 95 or NT/SNMP and DMI over IPX or IP	✔	✔	✔	✔	✔	✔	✔				(3)				✔	✔				✔	✔	None specified	$1,495 for NetWare and Windows NT servers
Intrak, Inc. (619) 695-1900	ServerTrak for Windows; ServerTrak for SFT 3.0	✔		Windows 3.X, 95 or NT/proprietary over IPX	✔		✔	✔	✔	✔	✔					✔	✔	✔	✔	✔		✔	✔	✔		Displays multiple servers in one window; automatically distinguishes between NetWare 3.X and 4.X	$150-$279 per server; $379-$429 per SFT server
Metrix S.A. 011-352-250-750-261	WinWatch Desktop Management Solution 2.0		✔	Cabletron Spectrum/ SNMP over IP	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔		(2)	✔	✔	✔	✔		✔	✔	Software distribution and license management; BASIC-like scripting language for customized management	$22-$100 per server; $11,000 for console applications
Microsoft Corp. (206) 882-8080	**Systems Management Server 1.2**		✔	**Windows NT/RPC and SNMP over IP, IPX, NETBEUI and others**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔		✔	✔		✔	✔	✔	✔	**No additional software required on managed servers; manages NT Server 3.51 and 4**	**$695, plus $55 per client; $999 for optional DBMS**
Novell, Inc. (801) 222-6000	**ManageWise 2.1**	✔	✔	**Windows 3.X or 95/SNMP over IP or IPX**	✔	✔	✔	✔	✔	✔	✔				✔		(2)	✔	✔	✔	✔			✔	✔	**List of open files, printers and print queues; desktop access; virus protection; network configuration**	**$795 for a 5-user NetWare server; $595 per NT Server**
Power Center Software LLC (303) 220-9789	Power Center for Windows NT 2.0		✔	Windows NT, various Unix/SNMP over IP	✔	✔	✔	✔	✔	✔	✔	✔	✔			✔	✔		✔	✔						Can also concurrently manage Unix and IBM server platforms	From $495 per server; additional notification and problem-monitoring applications extra
Seagate Enterprise Management Software (617) 368-3300	WinInstall 5.1	✔	✔	Windows NT/proprietary over IP, IPX and others	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔		✔	✔	✔	✔	Software distribution, upgrade and uninstall; wizard program helps user create custom script routines	$495 per server for 50 users; $1,295 per server for 250 users
Symantec Corp. (800) 441-7234	**Expose 3.5**	✔	✔	**Windows NT/SNMP over IP, IPX and others**	✔	✔	✔	✔	✔	✔	✔	✔	✔		✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	**Tailorable topology map; server inventory; traffic analysis by protocol; desktop access; LAN, WAN or dial-up**	**$695; various applications are sold separately**

Product names highlighted in color were selected for the Short List.

Chart compiled by Mier Communications, Inc.

Footnotes:
(1) Optional. (2) Limited support. (3) Supported for Windows NT only. NCP = NetWare Core Protocol RPC = Remote procedure call SFT = System fault tolerant

SNMP-based management system.

Features and functions

The next step is to find out what server management means to each vendor: There are widely differing views on this subject. To sort this out, we asked vendors whether they supported 21 specific functions.

Here's the features we specifically asked about, and the functionality those features offer:

■ **Number of users logged in.** This value is helpful in tracking users-per-server over the long term. Most users log in to their primary server in the morning and stay logged in all day, unless they are automatically logged out due to inactivity.

■ **List of logged-in users.** Information gathered using this feature can help you diagnose connectivity problems between specific users and the server.

■ **Server CPU utilization.** If you want to know how busy the server is at any particular moment, this feature is important to have. CPU utilization at 100% for short periods is not uncommon. But 100% CPU utilization for protracted periods indicates something is wrong and warrants further investigation.

■ **Server memory utilization.** As with CPU utilization, this feature shows how much memory is used and how much is available at any particular moment. Remember that 100% memory utilization for protracted periods indicates something is seriously wrong.

■ **Current applications running.** When you want to know what applications (usually in addition to what system processes) are executing at a particular moment, this feature can be helpful. For example, in cases of excessive CPU or memory utilization, the list of current applications running shows which are the biggest offenders.

■ **Traffic to and from the server.** Should there be any question whether the server's network connection is working OK, this feature will give you the data needed to find out.

■ **Server disk utilization.** Products that track this help you determine how much disk space is used and how much is still available. Such information will help you figure out when it's time to upgrade the server's disk capacity or perhaps consider moving to a RAID subsystem.

■ **CPU and memory use, by application.** If available, this information can help you more quickly identify software processes that are CPU or memory hogs, and which may warrant moving off to a separate server.

■ **Disk contents by directory.** Look for a product with this feature if you want to see the file and directory structure of the server's disk. Armed with such information, you can identify, for example, old, unused and perhaps replicated directories or files you might be able to delete.

■ **Server security management.** Suppor

for this feature indicates that, with appropriate authorization, you can remotely access and modify user accounts, share settings, passwords, log-on scripts and other aspects of the server's security architecture.

■ **Server software diagnostics.** Vendors claiming to support this feature should provide routines or utilities for diagnosing server software problems.

■ **Server hardware diagnostics.** Similarly, a claim of support for this feature indicates whether the package offers routines or utilities for diagnosing server hardware faults and problems.

■ **Capacity planning.** Products with this feature should include routines or utilities for protracted server performance management, trend identification (such as by time of day, by application or by user) and for recommending specific performance-improvement measures.

■ **Alarm/event threshold setting.** With this feature, you can set specific thresholds on the server which, if exceeded, result in an alarm or event notification.

■ **Special notification actions.** Besides issuing an SNMP trap or generating a log entry, this feature indicates whether the application can issue other alert notifications such as an electronic mail message or a signal to a beeper.

■ **Server topology map.** This pictorial display, which shows all the managed servers and their connectivity, can help you keep an eye on multiple servers, especially if it shows status changes in real time.

■ **Report generation.** Support for this feature indicates the vendor offers facilities for generating reports of server data or statistics. Often these are predefined, or canned, reports involving specific monitored data values.

■ **Custom-defined reports.** If you want to create your own custom reports, make sure the product offers facilities that enable you to define report formats for display and printing.

■ **Printing of screen displays.** Products claiming to have this feature should let you easily redirect data displayed on the screen to a printer.

■ **Data export in various formats.** This feature will let you know whether the data collected by the application can be stored in, say, an ASCII file format so that it can be retrieved over the network. Alternatively, this feature may make it possible for you to save data in comma- or tab-delimited formats for export to a spreadsheet program, for example, or a database management system for further analysis.

This is not an all-inclusive feature list. Other capabilities such as server-based software license monitoring could also be considered under the broad umbrella of server management. Likewise, some features could come under the even larger umbrella of LAN management, which encompasses a mix of functions from workstation management to electronic software distribution.

The very different software structures of NetWare and Windows NT require management-software vendors that support both environments to maintain two separate, yet parallel, ongoing development efforts. The real trick, though, is to make the user interface for managing these disparate platforms as common and consistent as possible. In time, though, this diversity may narrow and perhaps even disappear. Both Novell and Microsoft have committed to exploiting World-Wide Web technology in their products.

In a few years, rather than third-party management software, users may require only a Web browser to effectively access and manage their servers.

Mier is president of Mier Communications, Inc., a Princeton Junction, N.J.-based network consultancy, product test center and technical publisher. He can be reached at (609) 275-7311 or at ed@mier.com.

Visit Network World Fusion for links to tests we've conducted on products from four of the 14 vendors listed in the Buyer's Guide chart. You'll also find links to two sites dedicated to network management. One has an archive of comp.dcom.net-management Usenet group messages. The other is a collection of links to other sites.

Network World Fusion
http://www.nwfusion.com

Select NetRef, then Product Reviews/Buyer's Guides and click on NetWare and Windows NT server management software.

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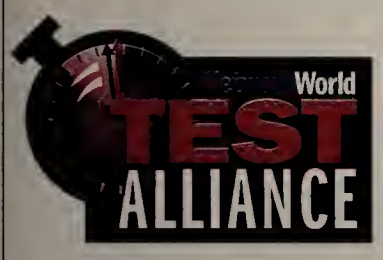
Managing directory objects

Five distinctly different tools help you keep your NDS directory trees healthy.

By Diane Danielle

While Novell Directory Services (NDS) gives NetWare 4.1 an edge over all its rivals, Novell, Inc. provides only the basic tools needed to administer and manage a network. Fortunately, a variety of third-party products designed to make NDS management easier have stepped into the breach.

If you are interested solely in pure NDS analysis and reporting, the choice between Preferred Systems, Inc.'s AuditWare for NDS and BindView Development, Inc.'s BindView EMS/NOSadmin for NetWare 4.0 may come down to pricing, a preference for online or offline reporting or a liking for one interface over the other. Both have many default reports in common and extensive ad hoc reporting capabilities. Both check for invisible objects and take a bit of effort to get the most out of them.



If, however, you want one tool that will let you report on servers and files as well as NDS, then BindView EMS is for you. If you insist on a DOS-based tool, BindView for NDS is your only choice.

For other needs, NetPro Computing, Inc.'s DS Expert focuses on partition and replica management, whereas Preferred Systems' DS Standard is an aid to the design, implementation and modification of NDS. We can't imagine supporting the average 4.1 network without DS Standard.

With the exception of DS Expert, all of the products are useful in either a single- or multiple-server NetWare 4.1 environment. DS Expert, because it focuses on partition and replica management, does not make sense for a single-server environment. Indeed, NetPro suggests potential customers have at least three servers before considering DS Expert. With five or more servers, we'd say it is just about worth its weight in gold.

All the products work fine under both Windows 3.1 and Windows 95, provided you are using NDS-aware client software. Indeed, although we installed them all on a server from a Windows for Workgroups 3.11 client, we were pleasantly surprised to be able to run them under a locally installed copy of Windows 95 without reinstallation and with minimum effort.

DS Standard NDS Manager

It's hard to categorize DS Standard. It doesn't help with partitions or replicas, and you can't use it to report on your server or your directory tree. It does, however, let you build models of trees before you even have a 4.1 server. It also eases your migration from 3.X to 4.1, and helps you plan and implement changes to an existing tree.

With DS Standard, you create views that can be drawn from an NDS server, a bindery server or no server at all (what Preferred Systems calls an empty view), and may be grouped into projects for convenience. Views are stored in an offline database; at no time do you ever work directly on your live tree.

After you create a view, you run a discovery process either against everything or just against the leaf objects. Discovery finds all the objects and properties in whatever part of the tree you select. This multistage discovery process can be confusing at first and may take quite some time on a WAN.

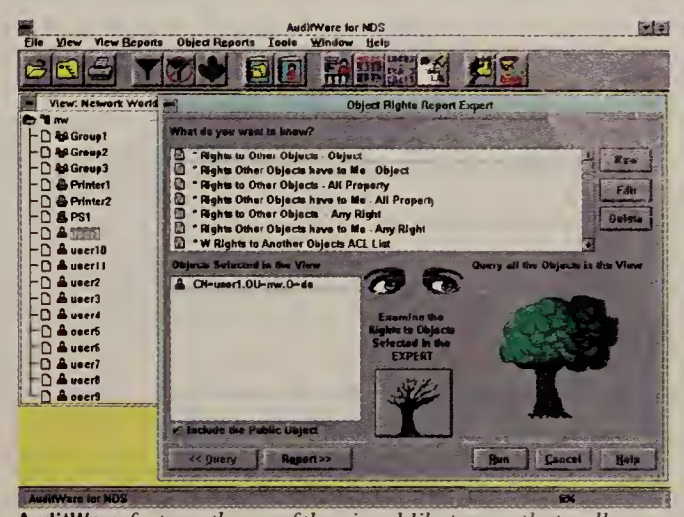
Once you have created a view, you can apply filters to it. The methods for manipulating the objects in these views are similar but not identical to those in NWAdmin, and the differences take some getting used to.

One of the product's most powerful features is the ability to drag and drop objects from one view to another. You can create one view that is a bindery discovery of your 3.12 server, create another view with your prospective 4.1 tree, and drag objects from the former to the latter. This makes it possible to implement a much more flexible, intelligent migration of bindery objects than is possible with NetWare 4.1's migration utility. If you're migrating multiple servers, DS Standard gives you much more control and confidence. Among other things, it ensures that objects discovered from a bindery have unique names, and will merge objects with identical names, according to rules specified in the documentation.

As a modeling tool, DS Standard isn't perfect. It has a verification utility that can tell if you've violated an NDS rule (such as too long a name), but it won't let you know if you create a printer but no print server or print queue. You can use it to create security equivalences and group memberships, but not trustee relationships. Although you can assign rights to directories and files, you cannot browse the directory tree: You must type in the full universal naming convention path.

On the other hand, you can globally search and replace object names and properties that can be case-sensitive (which is critical if, for example, you want to change entries in login scripts). You can use an object as the standard for a series of objects. Above all, you have the freedom of knowing that nothing you do will mess up your tree until you select the Configure option.

As a management tool, DS Standard can also help you set standards after the fact. If, for example, you want to add time restrictions to a group of users, and they were created from a user template that had no restrictions, you can make a global change. By contrast, changing the template in NWAdmin affects only new users. To fix the old users, you must edit them by hand. And if you keep your model up to date, you can use it to help recreate NDS if your backup fails to restore your NDS database and you have no replicas.



AuditWare *features the use of the wizard-like process that walks you through creation of reports like this one on object rights.*

AuditWare

Preferred System's AuditWare shares the same basic interface as DS Standard, and, like DS Standard, it doesn't work on your live directory tree. AuditWare creates offline databases of the tree views you have selected. An advantage of this approach is that you can put the database on your local drive and run reports against it without affecting network performance.

The first step in AuditWare is to create a new view and give it a name, or open an existing one. Then AuditWare discovers a view of your tree based on the NDS context.

A default logging function displays the discovery process as it happens. We recommend that you turn it on — by watching the discovery, you can see if you are skipping objects you did not mean to omit — but choose not to append the information to the log. Otherwise, you will be constantly scrolling to the bottom to look at the latest discovery.

The discovery process has one major limitation highlighted in the documentation: It excludes bindery objects and non-Novell created objects, such as those often added by third-party software products.

This restriction is limiting. It's likely to be a long time before we're able to build NDS trees that have no bindery objects, and most managers want to know how many bindery objects are floating around (even if they can't figure out what application did

SCORECARD

	DS Standard	AuditWare	NOSadmin	BindViewNDS	DS Expert
Overall score	**7.3**	**7.3**	**8.6**	**7.4**	**7.5**
Features (55%)	7	7	9	8	8
Ease of use (25%)	7	7	8	7	8
Licensing (5%)	9	9	8	4	4
Documentation (5%)	9	8	8	8	8
Online help (5%)	9	9	8	6	5
Installation (5%)	7	7	9	7	5

Note: Since not all of the products directly compete with each other, the scores represent how well the products compare to the ideal for their class.

the installation). Furthermore, if NDS is to fulfill its promise, we should expect to see third-party schema extensions and a lot of non-Novell objects.

AuditWare's performance was disappointing. The product seemed to take an inordinate amount of time to discover even a small tree or produce a fairly simple report. Complex rights-tracing work on a large tree may take several hours or more.

As with DS Standard, you can group individual views into projects for easier management, or refine a selected view by applying a filter. Because the filters include a number of Boolean tests and can be applied to any view, they may be more useful than the product's reports (which are tied to views) for comparative analyses of periodically created views. You can modify the default filters but cannot save the modification under a different name; you can create your own filters from scratch.

You can export objects to a .DBF file, but cannot select the file name — you must accept the default name AuditWare uses. You can also export reports to a variety of file types, such as comma-delimited, Crystal Reports and spreadsheets.

You cannot sort views or projects, which may be a problem if you create a lot of them, and the "sort by view" option for saved reports displays only the first four characters of the view name.

The online documentation contains a product called The Assistant, which gives a nice introduction both to AuditWare and NDS. The written documentation is well put together.

NOSadmin for NetWare 4

More than just a Windows version of BindView's classic utility, BindView EMS is designed to be an enterprise management system for a mixed network operating system (NOS) environment. NOSadmin for NetWare 4 is the first component; modules for NetWare 3.X and NT are in development. This is a well-designed, well-thought-out program.

After you've completed the installation, you must log in with the default user ID of "BV Admin." You can then add other users. BindView's developers have chosen to set up their own security program because they anticipate the product being used in a multiple NOS (NetWare 3, NetWare 4 and NT), multiple tree environment. For a NetWare NDS manager, this is a bit disconcerting. One goal of NDS, after all, is to centralize security and let you get rid of multiple security databases. We are not at all convinced that a separate security system is needed.

The console ships with a variety of canned reports displayed as icons under various folders with headings such as "Getting Started" or "Server Analysis." You can move icons from one folder to another by dragging and dropping them to a folder's tab. You can, of course, create your own reports and folders from scratch, or you can modify the shipping ones by name and content. When you display a report, you usually see a table with three types of fields: single-cell entries, list entries and form entries. List entries are multicell items. Forms contain unformatted text. You double-click on the list or form for the detail. Double-click on the primary object and you get additional information on it as well.

You can see examples of the different layouts permitted for a report, although you can't, in this first version, preview a report before printing it. Printing seemed

NetResults

Product	DS Standard 2.1	AuditWare for NDS 1.0	BindView EMS/NOSadmin for NetWare 4.0, Version 5.04	BindView for NDS 4.0d	DS Expert 1.01
Vendor	Preferred Systems, Inc. (800) 222-7638 (203) 937-3000 www.prefsys.com	Preferred Systems, Inc.	BindView Development, Inc. (800) 749-8439 (713) 881-9100 www.bindview.com	BindView Development, Inc.	NetPro Computing, Inc. (800) 998-5900 (602) 941-3610 www.netpro.com
Representative pricing	50 users: $895 100 users: $1,195 250 users: $1,895 500 users: $3,195 1000 users: $5,695 Unlimited users: $7,495	50 users: $895 100 users: $1,195 250 users: $1,895 500 users: $3,195 1000 users: $5,695 Unlimited users: $7,495	Console: $695 User object licenses, 100 pack: $1,495 File server licenses, 10: $4,295 Tree licenses, 5000 objects: $1,495	Console: $495 Server license: $595 Object licenses: 25: $295 100: $995 250: $1,995 500: $3,495 1,000: $5,995	Two-server starter: $1,299 Agent packs: 1 server: $495 5 servers: $2,295
Pros	▲ Solid training and modeling tool. ▲ Useful migration capabilities. ▲ Powerful find and replace functions make global changes easy.	▲ Attractive printouts. ▲ Can run analysis with no network present. ▲ Online help includes good NDS intro. ▲ Good selection of predefined filters and reports.	▲ Supports schema extensions. ▲ Intuitive interface. ▲ Good selection of predefined reports. ▲ Flexible ad hoc reporting with easy-to-create filters and sorting options.	▲ Supports schema extensions. ▲ Good performance, especially with Btrieve NLM. ▲ Flexible filters, sorts, report contents. ▲ QuickView lets you scroll through your tree. ▲ Good progress reports.	▲ Simple, clean, obvious interface. ▲ Fills a major NDS management need. ▲ Does what it is designed to do and does it well.
Cons	▼ Cannot see or manipulate objects created by schema extensions. ▼ Cannot create trustee relationships. ▼ Interface and discovery process are not intuitive. ▼ Object manipulation different enough from NWAdmin to be disconcerting. ▼ Browse functions not always available when you want them.	▼ Does not display bindery objects. ▼ Does not recognize schema extensions or objects created by them. ▼ Interface and discovery process are not intuitive. ▼ Limited control over printed report layouts.	▼ Report printing is excruciatingly slow. ▼ Limited control over printed report layouts. ▼ Licensing is complex. ▼ Separate security program.	▼ Requires more than 530K bytes of RAM. ▼ Awkward interface, especially for printing.	▼ Installation is troublesome. ▼ You must call NetPro to get and activate your license.

Online vs. offline

BindView Development, Inc. and Preferred Systems, Inc. take two very different approaches to analysis and reporting. The BindView products are online tools: They work against the live Novell Directory Services database. If you run the same report every hour and if your network is fairly active, the results probably will differ.

Preferred Systems, on the other hand, builds a copy of the NDS database, called a view, that is created via a discovery process. A view may consist of the entire tree or some part of it.

Once you've created a view, if you run the same report against it every hour you will get the same results because the view is static. On the other hand, if you run multiple reports, you can cross-check results of related but different reports because the database will not have changed. And if you want to see what has changed in your directory between two dates, you can run the reports at any time after the last date, as long as you saved views on those dates.

We think that both approaches have their advantages, and the best strategy for one customer may not be the best strategy for another.

If you need information that is accurate right up to the minute, such as a list of all files larger than 10M bytes that have been created in the past day, then online reporting is obviously better because offline reporting would, at best, require two steps — the discovery followed by the reporting — and, at worst, be inaccurate because the information would be out of date.

If, on the other hand, you want to run a series of reports with no impact on network performance, offline reporting is advantageous. You discover your network once, then run all your reports against the static copy, which can be copied to a local drive or a laptop. If you want to run comparisons from one period to the next, save your views. If you decide to add a new report to your arsenal, you can run it against your old and new views.

Both BindView products do let you schedule reports, so you could set them to run when network usage is low. In addition, they let you export information for offline reporting with other tools, but you can run reports only against the data you choose to export. If you want to run historical comparisons and decide to add another report, you're out of luck if you didn't export the relevant data. If, on the other hand, you use AuditWare to periodically save complete tree discoveries, you need not worry that you failed to export data you might want later. (If you save partial tree discoveries, you will, of course, have much the same problem as if you had exported selected data.)

— Diane Danielle

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quite slow. You can schedule a group of reports to run at a particular time, but, as with the DOS product, you can't set up repetitive schedules.

The ad hoc reporting capabilities are extensive. In contrast to BindView's earlier DOS product, you can't choose to limit your report to a given number of records, but you can set the scope of a report (much as you can limit an AuditWare view). In addition, on the window that displays the report's progress, there's an "Enough" button (which works most of the time) that you can click if a report isn't doing what you expected it to do.

NOSadmin for NetWare 4 comes with a variety of filters and sort options. However, we recommend that you use the Scope function rather than, or in addition to, a filter when possible for the best performance. The documentation consists of an Installation Guide and a Step-By-Step Guide. You probably won't need either. We do recommend strongly that you read all the readme files. We ran into some problems with the online help, but most of them seemed due to defects with Lotus Development Corp.'s ScreenCam program, which is used to show instructional videos. ScreenCam balks when installed as a network application.

ON LINE

For a detailed evaluation of the installation, licensing and reporting components of each of the products, as well as tips for which product to use to fulfill specific needs, select NetRef, Buyer's Guides and Reviews, then NDS Tools.

http://www.nwfusion.com

For a .0 release, this product feels mature. We did run into a couple of small glitches, and others are documented in the readme files. Still, we were impressed.

BindView for NDS

BindView for NDS in the only one of these products that runs under DOS, and it needs a lot of memory: around 530K bytes if you have the BTRIEVE NLM (BSTART.NCF) installed; 540K-550K bytes if you don't. It uses the classic NetWare C-Worthy menu with its classic, and limited, C-Worthy help.

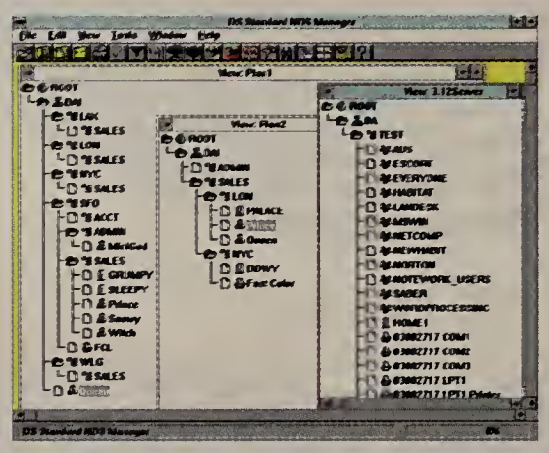
NOSadmin *uses a tabbed folder metaphor with folder or tree views to make report generation easier.*

Of the four options on the main screen, the one you should try first is the Quick View, which is just that: a quick way to get information on your tree and your servers. Select an object, choose what you want to know about it and then scroll through each item. Quick View is particularly good for looking at a specific attribute, such as trustee rights, for a group of like objects (users, containers, etc.).

The Report Generator contains many predefined reports. The program offers extensive filtering capabilities, appropriate to the object being reported upon, and sorting capabilities, although these are a bit awkward to manipulate. You can see your report on the screen before printing it, and you can limit the number of records you see or cancel a report if you notice that it's been going for a long time and hasn't found any records that meet your criteria. You can also change the NDS context for a report.

When you select a report, you must also select the type of report: baseline, dossier or spreadsheet. The baseline report is really a change-control report. You create the basic report and run it. The next time you select that report, BindView creates a temporary version of the new report, compares it to your baseline and then reports the differences.

The dossier and spreadsheet reports are output styles: Think of them as page-based and table-based reports. In dossier reports, information is grouped and displayed vertically on a page. In spreadsheet reports, information is displayed in a heavily formatted table, often with several lines of text separating each table. If you really want a spreadsheet, choose your favorite spreadsheet as the output device when you run the report. You can output your results to the screen, a printer, or a variety of formats controlled by setup options. The most irritating part of the Report Generator is the output selection: When you run a report, you must select the output device. You will be warned if your report won't fit and you can make a particular output the default for a particular report. The Report Schedule lets you select one or more reports to be run at a particular time, but you can't create a repeating schedule.



DS Standard *allows you to create a view of a NetWare 3.12 server, plan a structure for an NDS tree, then drag and drop objects into the appropriate places.*

We were impressed by BindView's performance using the BTRIEVE NLM. For reports similar to those we created with AuditWare, BindView was noticeably faster. BindView comes with two manuals: a small one with sample reports and a much larger User's Guide. The latter isn't designed for cover-to-cover reading, but should answer most of your questions if you run into problems with the interface, which is somewhat awkward.

DS Expert

Although NDS is a global directory, it is physically stored on file servers. For performance and fault tolerance on a large network, you usually want to partition the database into pieces that can be stored on different servers. Information must, of course, be constantly exchanged among the multiple replicas. Unfortunately, the built-in tools for managing this physical aspect of NDS are server-specific. To see your entire network, you must, in effect, set up a console for each server on your desktop.

DS Expert allows you to review all partitions and replicas on all your servers from a single console and, in concert with Novell's DS Trace, lets you selectively trace NDS traffic among multiple servers.

DS Expert's Starter Pack comes on just two diskettes and was the easiest product to use — but probably the hardest to install. (For details of the installation processes and licensing options of the other products, go online to Network World Fusion).

When you first load DS Expert, it discovers your entire tree. We found this discovery process to be quite slow, even on a small network. Once you've gotten past the installation and have the client software running, you'll see tabbed folders with well-designed tables that let you view replicas by server or partition and sort by name or alert status. You can set alerts for such things as inconsistent replica tables or synchronization errors. You can also monitor average traffic over a 15-minute, 1-hour and 24-hour time period. With the multiserver trace view, you select the servers you want to trace, the filters you want to use and an output screen.

Print reports are available. You can customize alert thresholds, but DS Expert has no mechanism for sending alerts through electronic mail or your beeper. Version 2.0, due out shortly, should include SNMP support and hooks into Novell's ManageWise.

Online help is minimal, but very little is needed. The documentation is slight but sufficient. The value of this product will grow with the size of your network. For larger networks, it is an essential tool.

Stalking stealth objects

Novell Directory Services uses a hierarchical security structure. By default, rights flow down the tree, and objects inherit the rights of their parents. You can, however, inhibit the inheritance of these rights. Although NetWare ordinarily won't let you remove a supervisor's access to an object, it is possible to get around this control and create objects that cannot be seen by browsing the tree with supervisor-level privileges. To detect such objects, which may indicate a potential security breach, both AuditWare and BindView look for the objects to which they have rights. If an object has rights to another object but cannot itself be seen by browsing with appropriate privileges, it is declared a stealth or invisible object.

Although you can do this type of analysis with Novell, Inc.'s utilities, it would be extremely time-consuming and manual. AuditWare and BindView automate the process. On a large tree, however, even an automated analysis can take a long time.

Both products can detect invisible leaf objects or containers. AuditWare can't detect an invisible object that has no rights to any other object; BindView can, but can't tell you its name. In our testing, AuditWare incorrectly identified two bindery objects as stealth objects.

— Diane Danielle

HOW WE DID IT

On our 10Base-T network, the primary server for most of the testing was a Hewlett-Packard Co. NetServer 4/66 LC running NetWare 4.1, with 4G bytes of disk space, 42M bytes of RAM, two volumes and about 50,000 files, with varying Novell Directory Services tree designs and numbers of NDS objects. The primary client was an AST Research, Inc. 486/33 with 16M bytes of RAM running DOS, Windows for Workgroups 3.1 and Windows 95.

We installed DS Standard on a 3.12 server and built several different model trees. We then installed it on a 4.1 server and used one of the models to migrate objects to the 4.1 tree. We captured views of the 4.1 tree, made changes through DS Standard and then applied them to the production tree.

For AuditWare and the two BindView products, we ran many of the predefined reports, created a variety of ad hoc reports, viewed and printed reports, evaluated the ease and effect of applying views or scopes and filters, and tested the products' ability to find invisible objects.

We did much of the DS Expert analysis at a client site with multiple NetWare 4.1 servers and replicas. We selected specific servers and types of traffic and monitored the results.

Network World TEST ALLIANCE

The alliance is a cooperative of users, consultants, educators and integrators that applies its technical and business skills to analyze and compare strategic network products. A list of alliance partners can be found on page 39.

Danielle is an independent network consultant in Berkeley, Calif., and a former network manager for a large West Coast financial institution. She can be reached via E-mail at 70020.645@compuserve.com.

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Teletutor: (800) 542-2242.

■ **Hewlett-Packard Co.** *is offering six* **Internet training** *courses designed to help users connect to the Internet and establish, manage and exploit intranets and Web sites.*

Courses can be taken at HP Education Centers or on-site. Fundamentals of the Java Programming Language is available now and costs $1,995 per student. Introducing the Internet and Setting up an Internet Site will begin a regular schedule in the middle of this month, and Advanced Internet Security will follow in September. The per-student cost ranges from $410 to $1,845. Internet Security Seminar and Building a Marketing Presence on the Internet are available by request. The cost of each course ranges from $4,000 to more than $6,000.

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Protocol Interface: (415) 491-8950.

Chargeback costs, not transactions

In a good chargeback system, you get departments to pay their true fair share of the net infrastructure freight.

By Peter Bendor-Samuel

When it comes to implementing a chargeback system to recover the cost for running today's networks, make sure the financial allocation reports it generates are in English instead of tech speak. More importantly, avoid the temptation to charge on a transaction basis such as per packet transmitted.

Why chargeback at all?

Here are three good reasons:

1. You need to communicate with users and executives about why costs grow and shrink, not just what equipment is being used.
2. You need to establish the law of cause and effect to explain why those who generate costs should pay for them.
3. If you do the other two properly, you'll be able to better fund departmental budgets to cover the infrastructure cost.

It has been our experience, and that of many of the attendees at the recent Financial Management and Data Processing Annual Conference in Scottsdale, Ariz., that a good chargeback system needs to focus on business issues and not technology.

While it seems obvious, the reality is that most companies are basing their chargeback systems on things they can count rather than on the real cost drivers, such as the purchase price for applications, the number of users or how many locations are on the net.

At the conference, no fewer than 66 sessions were dedicated to chargeback, IT cost management and accounting. In hallways and over lunch, managers from around the country shared their war stories and agreed that their current chargeback systems are difficult, expensive and resource hogs.

Many of today's chargeback systems do not accomplish their original purpose, which is to pass along network costs by communicating with users and establishing the law of cause and effect. Terms such as "user IDs," "FEP usage" and "kilobytes transported" are unfriendly and not used by business people. And lest we forget, they are the ones being charged. This lack of communication leads to dissatisfaction, frustration and lack of support from the user community.

A chargeback system should use business, not technical, terms that should explain what the cost drivers are in easy-to-grasp language.

What's a cost driver?

A simple explanation of a cost driver is anything that when changed in scale or scope will generate a corresponding change in the infrastructure. For example, many telecommunications departments today charge for their services by the kilobyte transported.

It is a poor solution because an increase in the number of kilobytes transported across a global multiprotocol network with fixed costs does not automatically translate into increased costs, unless that network was already at peak capacity.

Let's assume that the costs of this particular network are 80% fixed because it is frame relay and based on fixed monthly charges from a global carrier. Yet charges to the users would fluctuate wildly — perhaps to the extent that the network doesn't pay for itself some months when traffic is low.

Other types of networks might charge by other things that can be counted, such as port occupancy, packets transported, line speed, distance and CPU cycles chewed up. But again, these are not the real cost drivers.

Ironically, the chargeback system itself might be a significant cost driver.

Many companies today are using expensive sniffers, Simple Network Management Protocol, protocol analyzers and remote monitoring tools to measure transactions, which create drag on the network — in terms of cost and performance. In one instance, a large multinational, multi-organizational company that re-quested anonymity found that more than 50% of its total network costs were a direct result of its chargeback and usage monitoring.

The ABCs of chargeback

Better cost drivers to use for network chargeback include the number of users, which usually has a direct correlation to the amount of usage; user location and relative proximity to the rest of the network; and — importantly — the types of applications that run on the network.

Users of high-bandwidth applications should be assessed for their extra costs accordingly. This surprisingly simple solution is sometimes called activity-based chargeback (ABC), and there have been some startling successes using this method.

In essence, a manager using ABC would examine the total network costs — during the previous year or so — and then assign a value to the cost drivers based on the applications used and the location of the users.

ON LINE

You'll find more helpful information for building a good chargeback system on Network World Fusion Including:

- A white paper on how to design a chargeback system
- An overview of a Forrester Research, Inc. report that explains why many current chargeback systems are broken
- A white paper on financial management practices that make it easier to chargeback communications costs

Network World Fusion

http://www.nwfusion.com

Thus, even if only a small group within an organization uses the network once a day to transport large image files, that group's needs can dictate the size and scope of the entire network.

In addition, mission-critical functions like online transaction processing (OLTP) require a lot of backup, storage and recovery equipment that a simple electronic mail application would not. Therefore, the imaging and OLTP power users should be charged accordingly.

Chargeback points to remember

- Link charges to cost drivers.
- Different applications should be charged by how they affect the network.
- Charge by number of users of an application.
- Charge by number of sites and their relative proximity to one another.

Using real cost drivers, a division head adding more CAD/CAM users will see a rise in charges as the actual network costs for the company also rise — a direct and understandable correlation.

An added bonus is that an ABC system is much easier to manage. Built-in to any network is security that allows MIS and division managers to determine which user has access to what application.

This information is all that is needed to determine cost drivers, and it is totally nonintrusive to the user and has no impact on the network's resources.

At the conference, for example, Intel revealed that only one person is required to administer chargeback for its $500 million-a-year network.

Intel reached this remarkable achievement in part by focusing on communicating with its users to better meet their needs, aligning its cost drivers with costs, and creating a cause-and-effect relationship that its users could understand.

Because only a minimum of intrusive monitoring is required, Intel and other companies with activity-based chargeback systems have the best of all worlds: lower cost to the company and a more meaningful and accurate communication with the company's user community.

Bendor-Samuel is president of Everest Software Corp., which specializes in IT cost and outsourcing management tools, and consulting.

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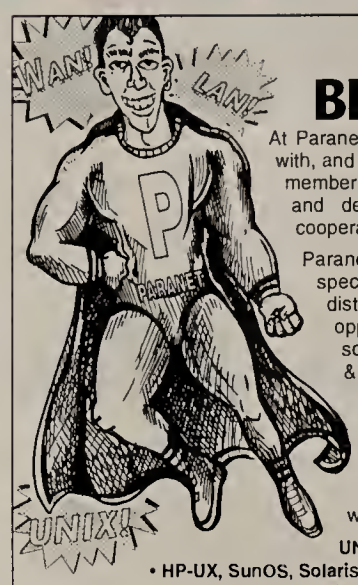

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The State of Wisconsin's next generation of telecommunications network services will be a combination of networks and management services to meet its voice, data, and video network needs. Currently, the State is in the process of procuring a SONET backbone network, as well as replacing other networks and services, which include an existing network management facility.

To consolidate, integrate, and streamline the management of its existing and future networks and services, the State is looking for a contractor to provide, manage, and operate an Enterprise Network Management Center (ENMC) facility for the State. It is expected that the organization bidding on this project will have a substantial corporate capability in network management including proven expertise and experience for this critical function.

The state is in the process of issuing a solicitation in the very near future for this procurement. If you are interested and capable of providing an ENMC, please respond to Eric Pearson, Department of Administration, Bureau of Telecommunications Management, PO Box 7844, Madison, WI 53707-7844. FAX number (608) 266-2164, by providing a point of contact for all correspondence, and a concise explanation of the firms expertise and experience in enterprise network management. Please respond before Wednesday, August 14.

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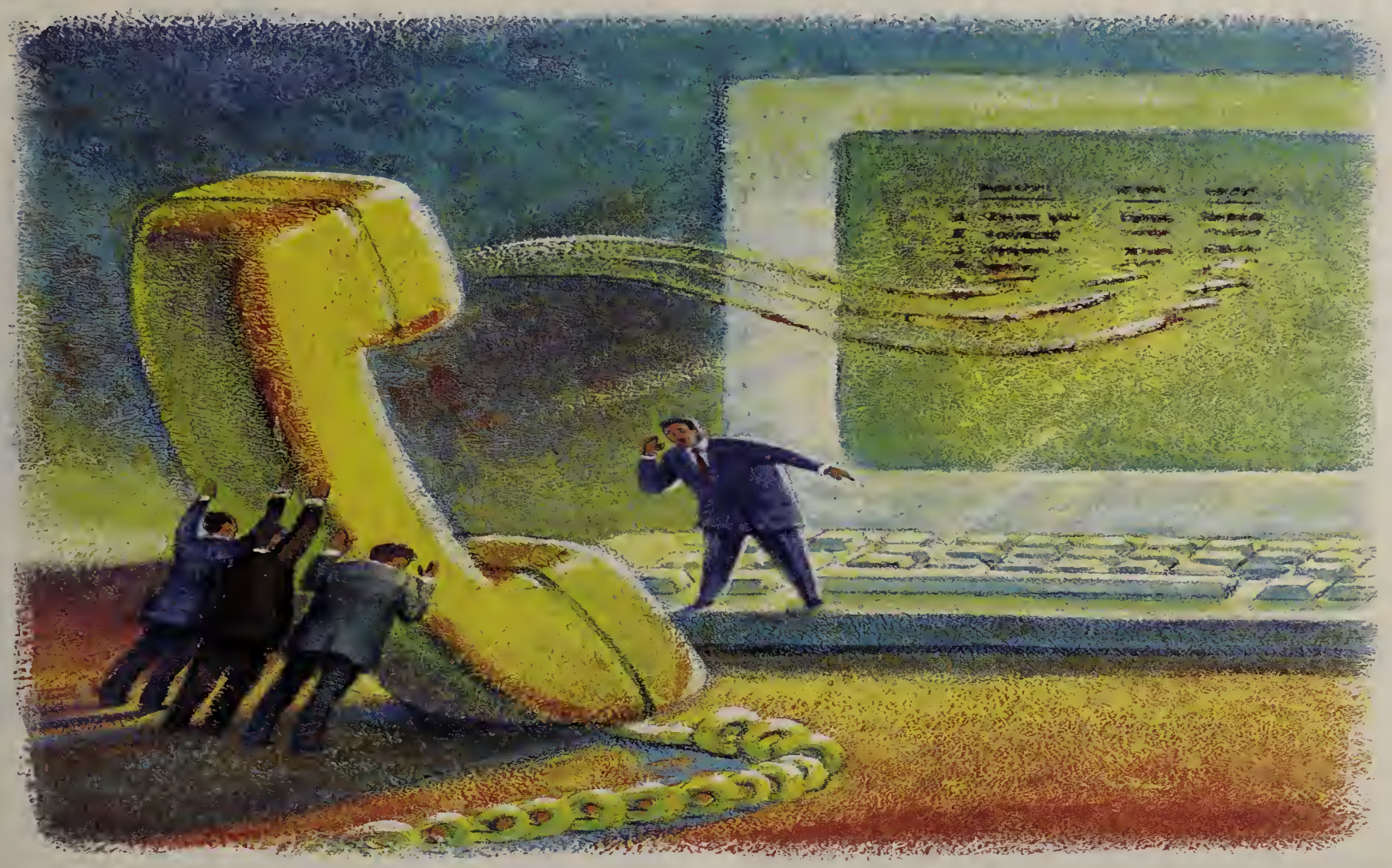

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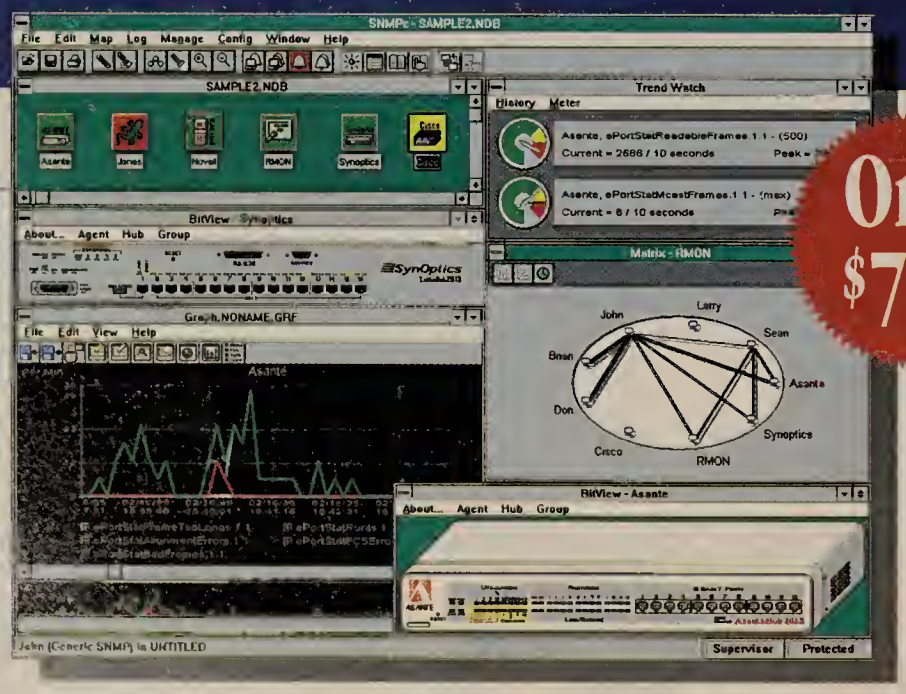

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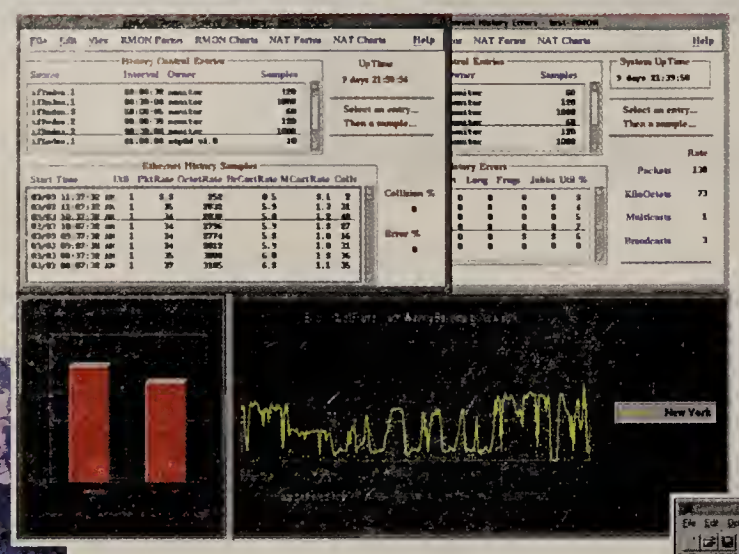

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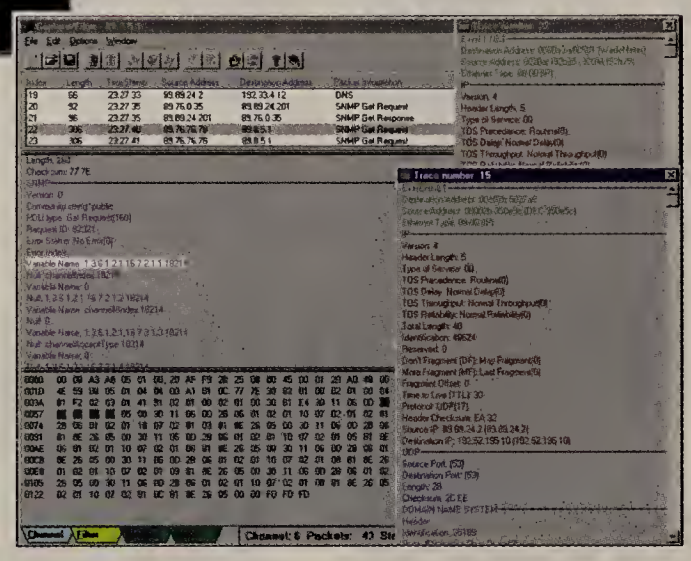

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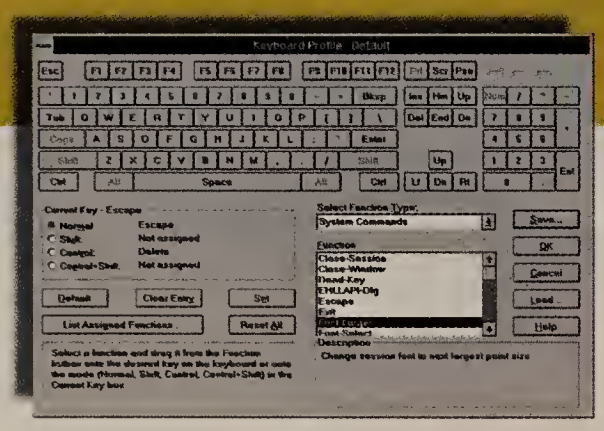

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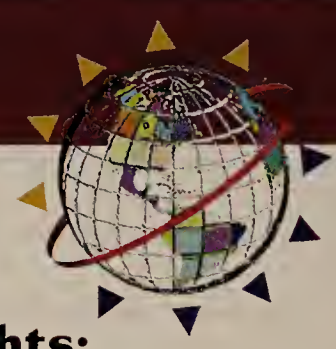

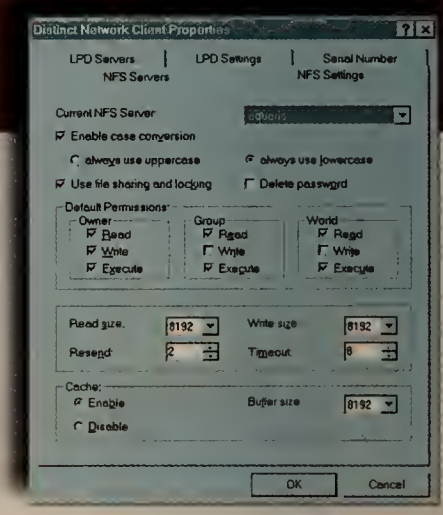

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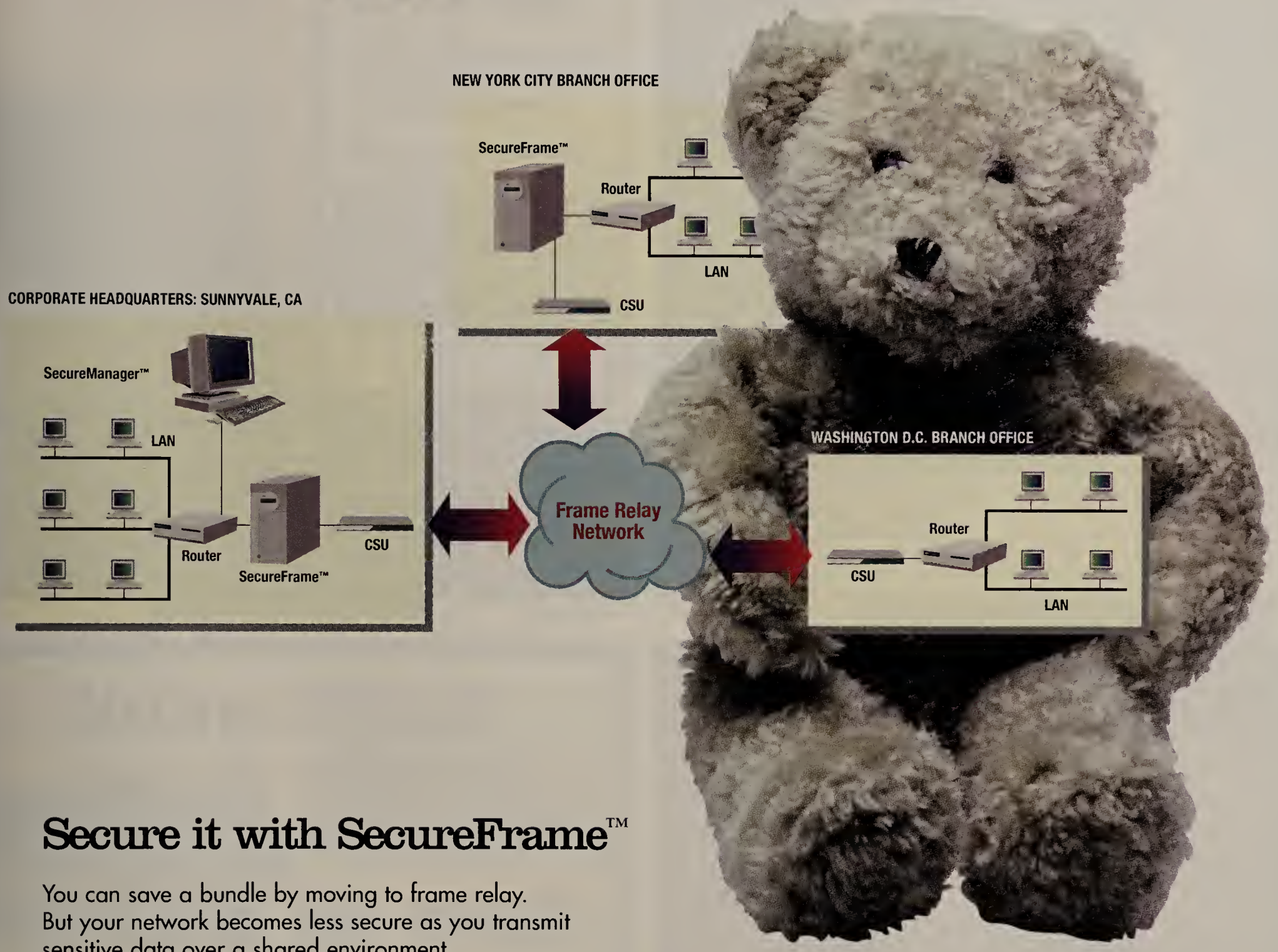

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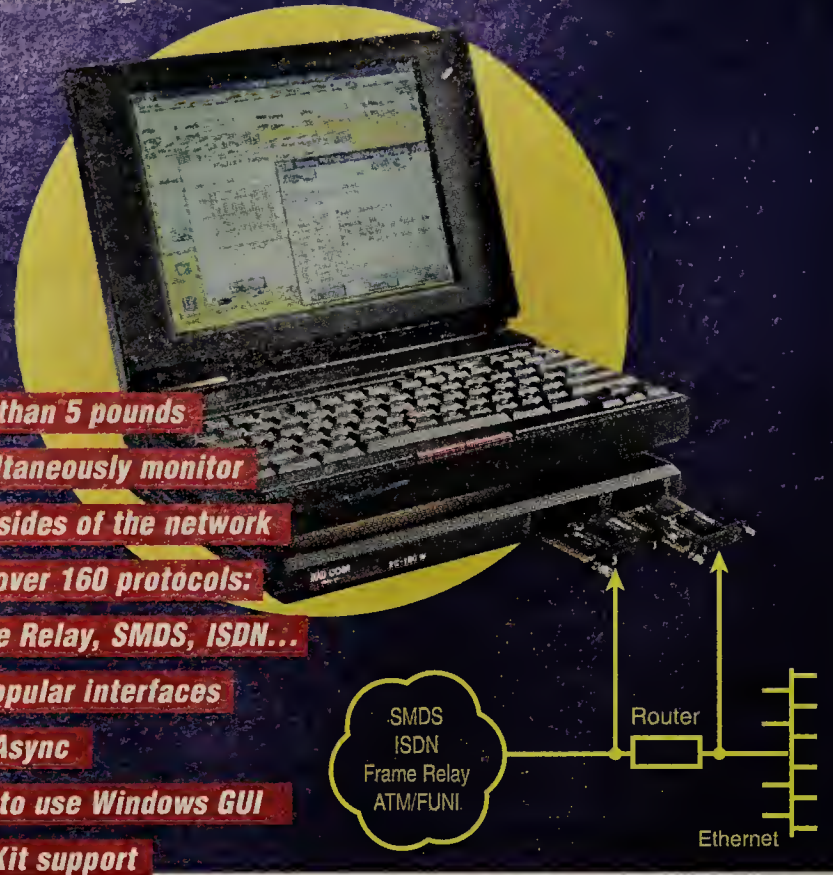

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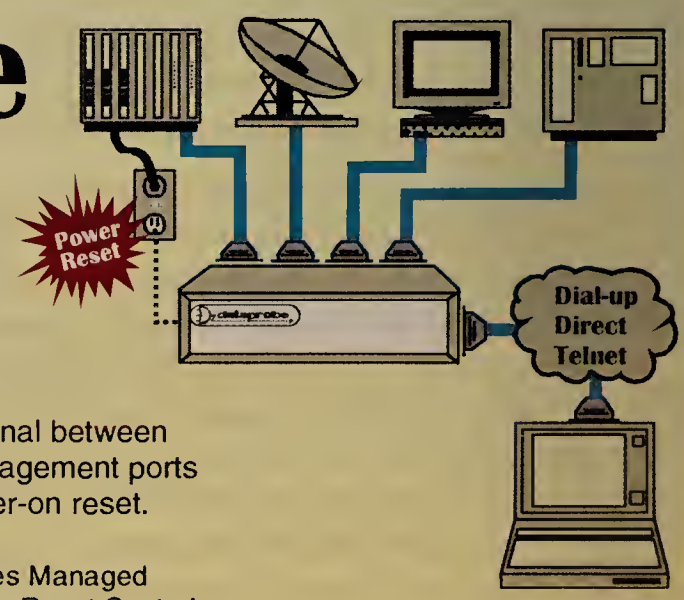

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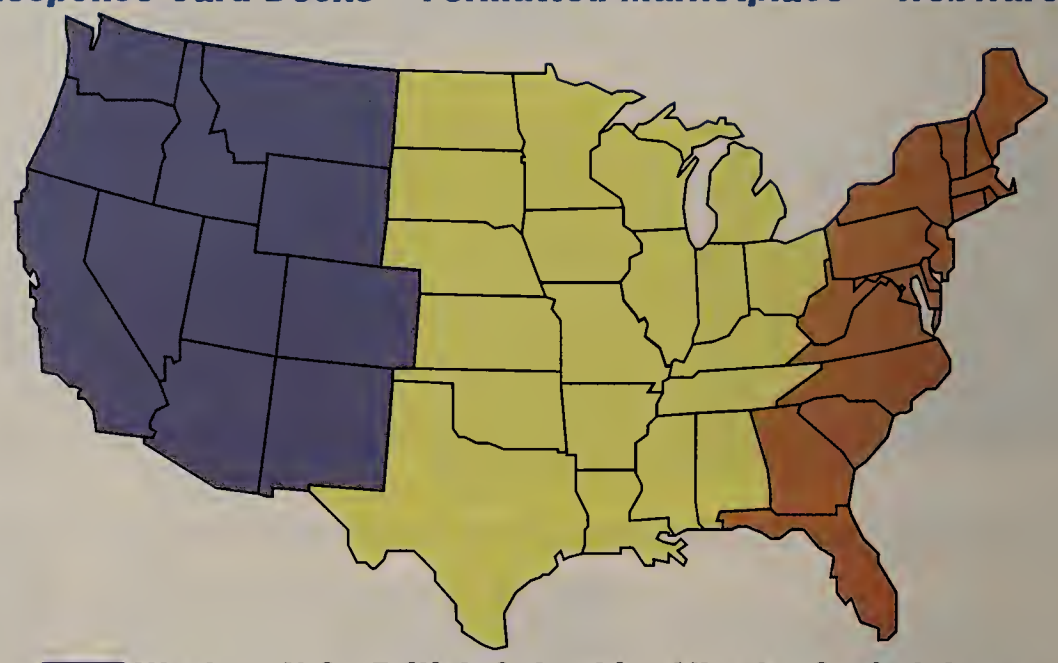

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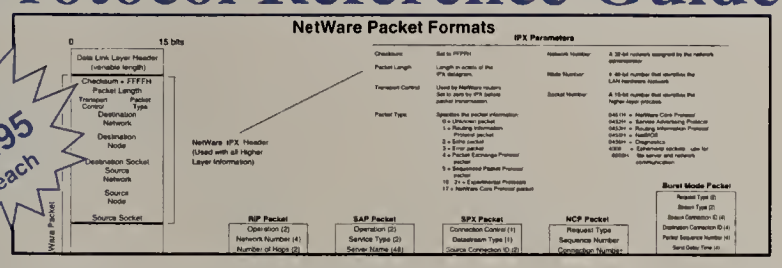

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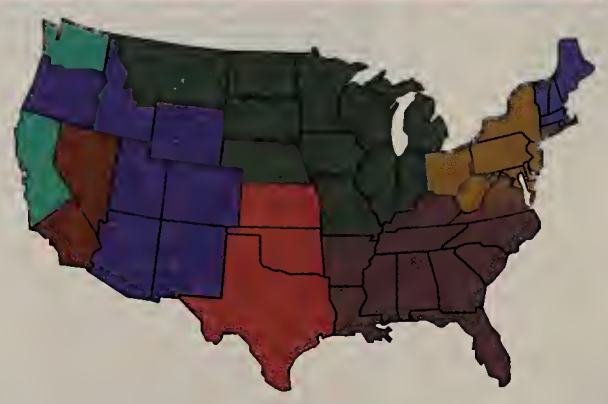

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FCC

Continued from page 1

over those without, for example, and interexchange carriers that resell local service continue paying RBOCs an access charge even for customers whose local business the IXCs have stolen away. This action has left AT&T grumbling and RBOCs — upset about aspects of the pricing requirements — considering court appeals. Depending on how they respond, local phone competition could be delayed.

However, the thrust of the FCC decision gives customers hope that competitors will be able to get into the local market and drive prices down. The FCC-endorsed wholesale discounts and pricing mechanisms seem bent on keeping the cost of entry low for new providers, according to Rich Eastman, vice president of engineering and network design for Virtual Presence International, Inc. in New York. "It's obviously going to have a downward pressure on pricing," he said.

Rules of engagement

The FCC order sets conditions for existing local exchange carriers to follow when interconnecting their networks with long-distance carriers and others who want to invade the local loop.

Technically, the rules apply only in cases where the new entrant and the RBOC cannot reach an interconnection agreement on their own.

And while it did not make everyone happy, the ruling did have at least some positive aspects for most parties.

For example, the FCC specified seven points at which RBOCs must interconnect their networks with competitors' nets — fewer than the 11 AT&T wanted but more than the three that most RBOCs sought.

And among the seven interconnection points is access to so-called operations support systems and information. AT&T officials said this point of interconnection gives them the ability to electronically bond with RBOCs' ordering systems and overrules numerous RBOC requests to do business by fax or other cumbersome means.

Pricing guidelines

The FCC also ruled that in states where regulators are unable to perform their own studies to come up with a different number, long-distance carriers that want to resell local service are entitled to wholesale rates that are 17% to 25% off the retail. AT&T had asked for 40% off, but accepted the ruling, saying that electronic access to ordering systems wiped out some anticipated costs.

The fact that specific price ranges were named and that the FCC set down the method by which other rates will be set drew fire from RBOCs, which claim the telecommunications reform act did not give the FCC that power.

The decision leaves a bad taste in the mouths of some RBOCs. "Once we assess its full impact, we will determine what legal steps may be appropriate," said F. Duane Ackerman, vice chairman of BellSouth Corp.

The FCC price guidelines include not only the 17% to 25% resale discount, but also the methods used to charge for leasing individual parts of the local network that competitors might want to buy, such as the actual copper loop, switching or access to databases. FCC guidelines for those unbundled elements are attractive to competitors.

The long-distance access charges that AT&T is complaining about are paid to the RBOCs for terminating long-distance calls on their networks. If the long-haul carrier were reselling local service, it could terminate its local customer calls on what would technically be the long-distance carrier's own network. But the FCC rule means the long-distance carrier has to pay the long-distance access charge for using its own local network.

The FCC recognizes that the issue needs to be resolved, and will do so by mid-1997. Long-distance carriers must continue to pay the long-distance fees, which total about $25 billion a year from all IXCs, even for local customers they may pick up in the meantime.

The FCC tried to soften the blow to carriers by reducing a key component of the access fee by 25% if the competitive carrier buys at least some unbundled network elements rather than engaging in pure resale. ■

May we suggest a number?

The FCC spelled out two ways to determine how much of a discount competitors will receive from the dominant local carrier if they want to resell local telephone service:

- Perform a study to determine the discount.
- In the absence of a study, range the discount between 17% and 25%.

How the FCC ruling affects you

By David Rohde
Washington, D.C.

The Federal Communications Commission's massive ruling last week on local network interconnection leaves some key questions answered and others still up in the air. Here are responses to some network managers' concerns.

Why did the FCC have to act? Congress already passed a telecom reform bill.

The new telecom law left it up to the FCC to decide how regional Bell operating companies should interconnect their local networks with new competitors. Without such interconnection, new competitors would have no chance to compete, since the basis of the U.S. telephony system is the ability to reach anyone else and most customers will likely remain with RBOCs for a long time.

Does the ruling mean there will be competitive options all at once for users everywhere, or will that develop one market at a time?

It'll be market by market. The FCC backed away from its initial inclination to set a strict national standard for new local competitors to interconnect with RBOCs. Most of the final decisions on exactly what RBOCs can charge new local carriers for interconnecting will be up to the state public utility commissions, which move at varying speeds.

Does this ruling turn local pricing over to market forces, or will prices still be regulated?

It depends on who you get service from. If you can find a new local carrier with a complete local network in the ground (or the air), prices will be pretty much up to you and your new vendor. All they'll have to do is compensate the RBOC for terminating calls your company places to customers who are still with the RBOC. But if you deal with a new local carrier that has to lease part of the RBOC's network — the so-called seven unbundled network elements — they'll have to pass along those costs that will now be set by state regulators in accordance with principles laid out by the FCC.

What are those principles?

There's an overwhelming one. The FCC said states must base the charges for unbundled network elements on "Total Element Long-Run Increment Cost," or TELRIC. Translation: RBOCs can't count past investments in their switches and so on, and instead must count only forward-looking costs when charging new carriers for those network elements.

How will the data market be affected by these rules?

Switched data connections — both analog dial-up and switched digital services, including ISDN — are directly affected. Any hope of getting services like these from RBOC competitors depends on local network interconnection. Dedicated data connections — such as alternative private-line access circuits to long-distance networks — are not directly affected, since many users already have these from CAPs. But to the extent carriers like AT&T, MCI and Sprint can make a go of the switched local business, they are more likely to provide new private-line options to users.

How long before RBOCs sell long distance and interexchange carriers sell local service?

Unfortunately, both still appear a ways off. Interconnection agreements must still be negotiated, arbitrated, and possibly litigated, all while each of the 50 states digests the FCC ruling to make sure the agreements they arbitrate conform. "The decisions we adopt today do not bring telecommunications reform to an end," said FCC chairman Reed Hundt. "But we can say that we have reached the end of the beginning." The problem is, that's just what officials were saying after Congress passed the telecommunications reform act in February.

Do the FCC interconnection rules guarantee that competitive carriers will be able to offer good service quality?

Yes, to the extent that such a thing can be mandated by government. The FCC ruled that RBOCs must provide equal support to all users, even those they lose to new competitors.

What does the ruling mean to competitive carriers that have already cut interconnection deals in some markets? Do those deals stand, or must they be renegotiated?

The deals stand. Technically, the FCC's new rules apply only to cases where state regulators have been called in to arbitrate interconnection agreements between parties that have failed to come up with a voluntary agreement.

Does the ruling seem measured and well thought-out or slapped together to meet a deadline?

Actually, some parties think the FCC overdid it. Duane Ackerman, vice chairman and chief operating officer of BellSouth Corp., complained that "the FCC appears to be micromanaging the telecommunications industry." ■

NetworkWorld
161 Worcester Road
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(508) 875-6400

Periodicals postage paid at Framingham, Mass., and additional mailing offices. Posted under Canadian International Publication agreement #0385662. *Network World* (ISSN 0887-7661) is published weekly, except for a single combined issue for the last week in December and the first week in January by *Network World*, Inc., 161 Worcester Road, Framingham, Mass. 01701-9172.

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Network World can be purchased on 35mm microfilm through University Microfilm Int., Periodical Entry Dept., 300 Zebb Road, Ann Arbor, Mich. 48106.

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Dumb and Dumber Part II: Microsoft aims at foot, but shoots wallet instead

I usually try to refrain from saying things like "I told you so," but guess what? I told you so.

If you read my column last week, you know that Microsoft was going to limit Windows NT 4.0 Workstation so that it supports only 10 incoming IP connections per 10-minute period.

Just before my column went to print, I had to add that Microsoft had apparently backed down from this misguided idea. But I added that, as we still hadn't seen the licensing terms, our sense of relief might be a little premature.

I was right: The iron fist has since emerged from the virtual velvet glove. The license terms for Windows NT 4.0 Workstation RC2 (Beta B) state:

"You may permit a maximum of 10 computers to connect to the Workstation Computer to access and use services of the SOFTWARE PRODUCT, such as file and print services and peer Web services. The 10-connected maximum includes any indirect connections made through software or hardware that pools or aggregates connections."

Now we have the iron fist fully exposed, aimed straight at our noses and outlined in neon.

These license terms are downright stupid. Not only are they against what I perceive as the spirit of the market (and such things do matter), but they are essentially impossible to comply with.

The problem with compliance is that any site that uses a proxy server could cause you to unknowingly violate the license. But the true stupidity is that this ill-conceived and (let's call a spade a bloody shovel) cheap ploy damages Microsoft's standing in the market.

Many might snidely say, "What standing?" and mutter darkly about how Bill probably has 666 tattooed on his pocket protector. But the reality is that Microsoft just behaves in the best tradition of American entrepreneurship.

The only people who seem to think this is improper behavior are, I humbly contend, those who don't approve of success. Oh, and Janet Reno, who would probably like to surround the Redmond campus, lob a few tear gas grenades in there, and shoot the staff as they run out. But I digress.

By all means, complain that Microsoft's position is not acceptable to the market, that it is a breach of trust, of doubtful ethical standing or whatever, but please let us avoid the usual cries of "It's not fair."

Show your displeasure in the most effective way — by how you spend your money.

Let us be clear. Even if the license terms are dubious and the motivation questionable, it is Microsoft's absolute right to do this. The company spent the money to develop the operating system, it promotes it, and it is the company's prerogative to license it any way it sees fit.

So what's the solution? It's simple: Don't buy NT Workstation. And don't buy Windows NT Advanced Server.

Show your displeasure in the most effective way possible — by how you spend your money.

The alternatives? Unix. OK, well, perhaps that's not for everyone, but it is an option.

How about OS/2? "OS/2?" you cry. Well, just think about it. IBM has been looking for a chance like this forever. The OS/2 Warp client, code-named Merlin, is due for release later this quarter and will include integrated Java support. This could be just the excuse IT folks need to tell Microsoft where to get off.

And then there's NetWare. For a total of $995, you get NetWare 4.1 Runtime and the NetWare Web Server. A little creative pricing there, and Microsoft's hopes of owning the intranet/Internet market could be wiped out. And the next release of NetWare 4 will have built-in Java.

The final release of Windows NT Workstation could have a different license, but it's also possible Microsoft could be in the process of making one of its biggest mistakes ever. Stay tuned. This is going to be interesting.

Thanks to Tim O'Reilly of O'Reilly & Associates, Inc., who brought this to my attention. What do you think? Let Gibbs know at mgibbs@gibbs.com or call him at (800) 622-1108, Ext. 504.

With so much information, who has time for real work?

Do you find yourself flooded with information, but unable to find the data you need?

This is the paradox of the infoglut. The wealth of information available today can impede decision making, rather than simplify it. The trick is to learn how to regulate the flow.

Must-have information pours in from too many locations, but the time-tested sources often remain the best. These include on-the-job training, coworker gurus, pals at old employers and senior technicians from key vendors. Heck, even the boss is good for an answer or two. (At least that's what he wants you to think.)

So, all this fills a normal work week. Now consider alternative information sources that are guaranteed to rob evenings and weekends.

For starters, there are vendor schmooze sessions — though at least those yield a decent meal and drink. Of course, if you agree to attend that marketing seminar disguised as a technical training class, plan to kiss off another day.

The wealth of information available today can actually impede decision making, rather than simplify it.

People with degree-envy can earn a technical certification. The curricula of programs such as Novell, Inc.'s Certified NetWare Engineer, and similar offerings from major network vendors, are packed with information, some of which might actually come in handy. But they can cost thousands of dollars and months of personal time. Certification might make you feel more qualified for a job, but some question their technical value and report little effect on salary.

Day-long tutorial cram courses at industry trade shows, such as NetWorld+Interop, can be effective. But their value depends on the particular instructor. They also require travel time away from work, which usually results in overtime to catch up.

Then there's my personal favorite, from which I derive part of my income: trade publications. There are more than 200 general computer and network periodicals, not including 35 that are Internet- and Web-specific, according to Cambridge, Mass.-based Media Map. This figure excludes industry-specific publications.

Each periodical is called a book in publishing industry lingo. (And we're not talking here about the thousands of computer books published each year.)

And each one promises to make your life easier.

A typical information systems professional reads about a half-dozen trade weeklies and an equal number of monthly periodicals. That's about 4,000 pages of articles and advertisements to flip through each month — not counting the four-foot stacks piled next to your desk. And don't forget to E-mail each author to critique the articles. You *did* read them, didn't you?

Let's see, what else? Darn! How could I forget the Internet's 400,000 Web servers and God knows how many other sites offering information? Since there is no time to surf during the work day, you can grab this information firehose after you put the kids and spouse to bed.

The Web is both wonderful and a pain. It's still hard to find useful information.

Even search engines can't do it right. People are forced to use several because they all provide different results. Who has time to constantly look for something that might not exist?

So what does an ordinary mortal do to get the right mix of information without overloading? Some of these ideas might work for you:

- Be stingy with vendor meetings.
- Admit that you will never be able to read everything. Stop feeling guilty.
- Throw out the clutter of unread publications. You can find old articles online if the need arises.
- Cut your browser's bookmarks to 10. Reduce purposeless hyperbrowsing.
- Limit reading to publications that give useful insight. Eschew all others.

Life is too short to let information hold us hostage. Intelligently ration its intake. You'll still get your work done, minus the anxiety and paralysis of too much of a good thing.

Buerger is a networking industry consultant and writer in Atlanta. He can be reached at dave@buerger.com.

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